TECHNOLOGY DEPT:

THE PAPER INDUSTRY and PAPER WORLD

AN EDUCATIONAL NEWS MAGAZINE — OCTOBER, 1943

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"There'll be a Post-War World for Paper"

Use PATTERSON PLANNING today-

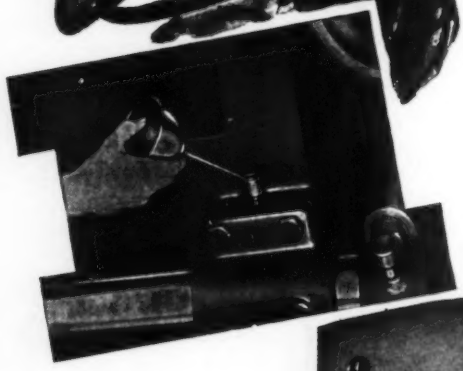
PROFIT WITH PATTERSON EQUIPMENT TOMORROW

A fresh start for higher quality pulp and paper at lower cost! Let Patterson plan your process now . . . ready to use the moment conditions are favorable!

Richard L. Cameron
President

THE PATTERSON FOUNDRY AND MACHINE COMPANY
EAST LIVERPOOL, OHIO, U. S. A.

It's EASY to keep your SEYBOLD trimmers in good "fighting condition"



DO THIS ONCE A DAY

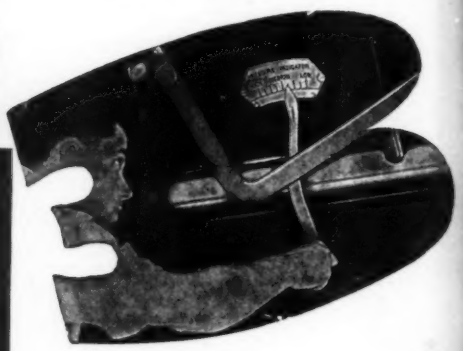
Lubricate the drive shaft, bearing, clutch and all other moving parts. Clean dust, lint and old grease from operating surfaces. Inspect the cutting knife.

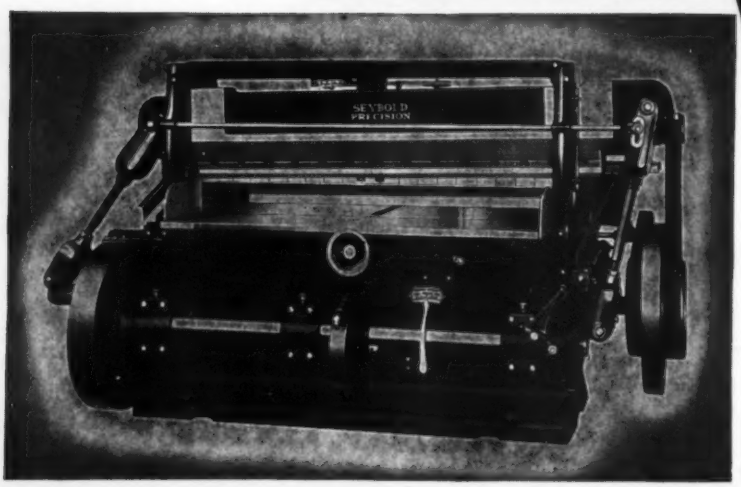
ONCE A WEEK

Check the clutch and brake adjustment.

ONCE A MONTH

Inspect the clamp pressure mechanism





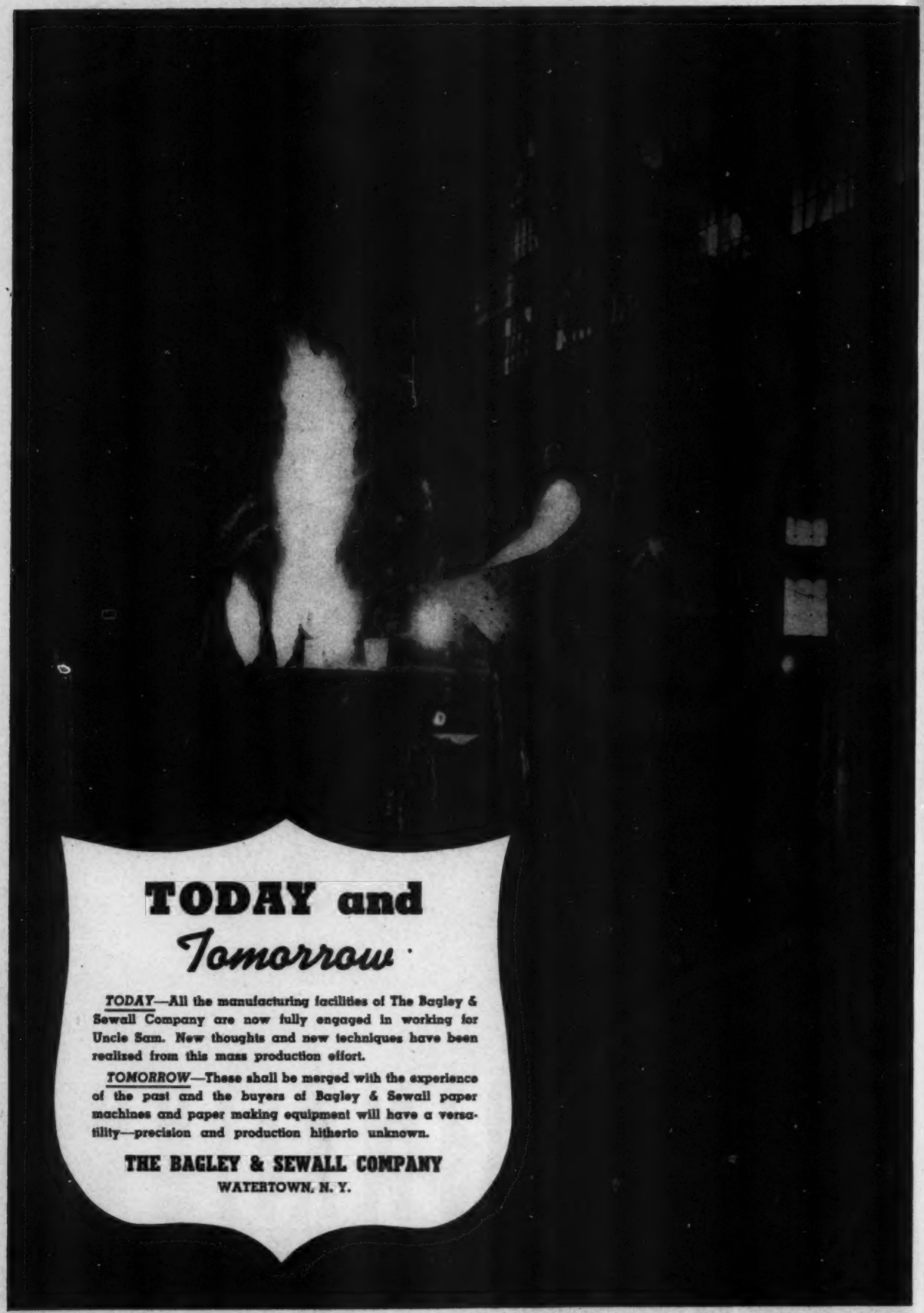
...and they will last for years and years

Should you require repair or maintenance service, call your SEYBOLD REPRESENTATIVE.

SEYBOLD

• DIVISION •

YANKEE DRYER INTO YANKEE DOODLE!
Here's one for the "Point-with-Pride" Department: This grinder, not so long ago, was turning, grinding, and polishing paper machinery—your Yankee Dryer, for example. We can't reveal what it's doing in *this* picture . . . but you can be sure the job is one it never did before Pearl Harbor! Ingeniously re-tooled for war production, it's a good example of how Beloit Engineering has saved precious time and materials by putting "one-purpose" machines to work for Uncle Sam.
Buy War Bonds for Victory!
BELOIT IRON WORKS
PAPER MACHINERY
BELOIT WIS. U.S.A.
SERVING UNCLE SAM
1ST
FOR THE DURATION
BELOIT
BELOIT IRON WORKS, BELOIT, WIS.
WHEN YOU BUY BELOIT . . . YOU BUY MORE THAN A MACHINE!



TODAY and *Tomorrow*

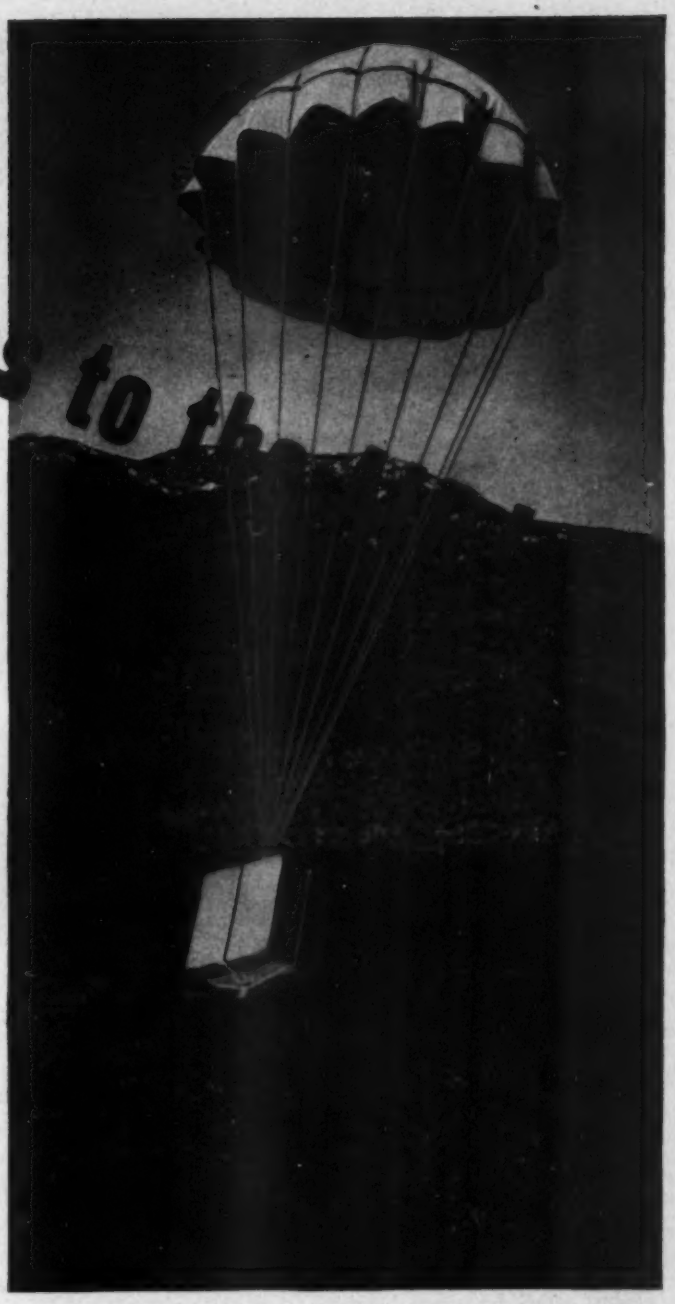
TODAY—All the manufacturing facilities of The Bagley & Sewall Company are now fully engaged in working for Uncle Sam. New thoughts and new techniques have been realized from this mass production effort.

TOMORROW—These shall be merged with the experience of the past and the buyers of Bagley & Sewall paper machines and paper making equipment will have a versatility—precision and production hitherto unknown.

THE BAGLEY & SEWALL COMPANY

WATERTOWN, N. Y.

PAPER takes to the



DROPPED from a low-flying plane, a life-saving unit of food, water and medicines floats gently down . . . supported by this paper parachute. Designed to open in 3 seconds and safely lower up to 50 lbs. of equipment, this 'chute typifies the many important wartime contributions of paper.

With paper replacing so many other materials in these war times, paper mill operators everywhere are assuring maximum efficiency from their equipment, by lubricating it with Texaco.

Texaco Ursa Oil, for example, assures normal bearing temperatures. It resists breakdown and sludging, keeps oil lines clear with a free flow of clean lubricant to each and every bearing in the system. It is uniformly easy to filter or reclaim.

So effective have Texaco lubricants proved that they are definitely preferred in many important fields, a few of which are listed at the right.

A Texaco Lubrication Engineer will gladly cooperate in the selection of the most suitable lubricants for your plant. Just phone the nearest of more than 2300 Texaco distributing points in the 48 States, or write to:

The Texas Company, 135 East 42nd Street, New York 17, N. Y.

THEY PREFER TEXACO

★ More Diesel horsepower on streamlined trains in the U. S. is lubricated with Texaco than with all other brands combined.

★ More locomotives and railroad cars in the U. S. are lubricated with Texaco than with any other brand.

★ More revenue airline miles in the U. S. are flown with Texaco than with any other brand.

★ More buses, more bus lines and more bus-miles are lubricated and fueled with Texaco than with any other brand.

★ More stationary Diesel horsepower in the U. S. is lubricated with Texaco than with any other brand.

TEXACO

TEXACO Lubricants
FOR THE PAPER INDUSTRY

TUNE IN THE TEXACO STAR THEATRE EVERY SUNDAY NIGHT — CBS ★ HELP WIN THE WAR BY RETURNING EMPTY DRUMS PROMPTLY

ON GUARD!

Not things of beauty, those huge ungainly barrage balloons that hover over our convoys at sea and over cities and bases overseas! But our boys know well how comforting it is to see in the sky these tough, durable synthetic rubber balloons, with their miles of steel cables, standing guard against attack by enemy bombers.

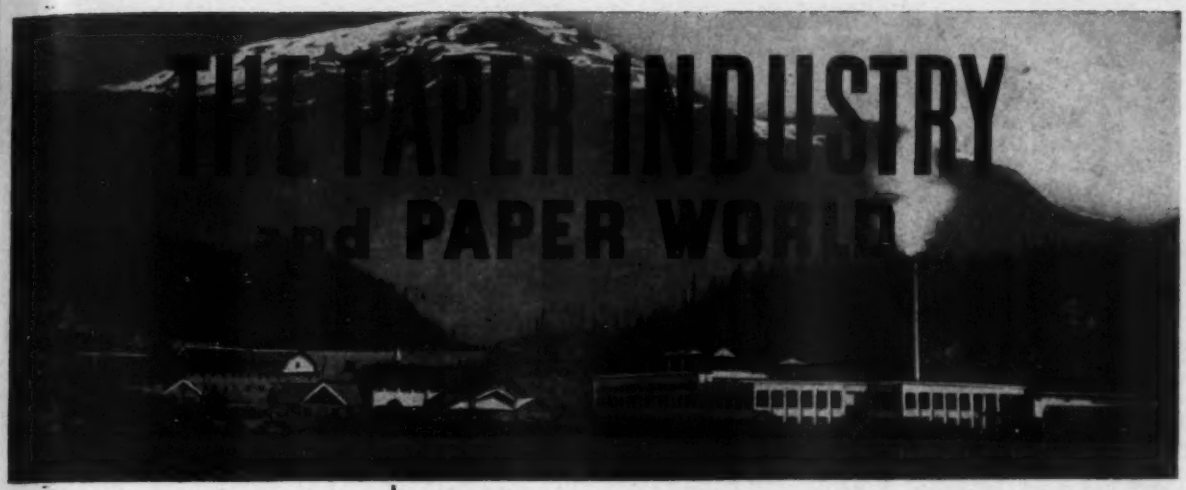
All over the world, wherever our fighting men go, Mathieson Chemicals in one form or another go with them —not only in barrage balloons, but in ships, planes, tanks, guns, gasoline and lubricants, clothing, food, medical and sanitation supplies. For Mathieson chemicals—chlorine, caustic soda, soda ash, ammonia and other Mathieson products—are vital raw materials in nearly every phase of American war production.

Today, while it goes without saying that "the needs of our Armed Forces come first," Mathieson is exerting every effort to supply materials for civilian needs as well. Tomorrow, when final victory has been won, Mathieson will again stand ready to render its normal peace-time service to American industry.

Mathieson CHEMICALS

THE MATHIESON ALKALI WORKS (Inc.) 60 EAST 42nd STREET, NEW YORK, N. Y.

LIQUID CHLORINE . . . SODA ASH . . . CAUSTIC SODA . . . BICARBONATE OF SODA . . . BLEACHING POWDER . . . HTH PRODUCTS . . . AMMONIA, ANHYDROUS and AQUA . . . FUSED ALKALI PRODUCTS . . . SYNTHETIC SALT CAKE . . . DRY ICE . . . CARBONIC GAS . . . SODIUM CHLORITE PRODUCTS . . . SODIUM METHYLATE



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VOLUME 25 — OCTOBER, 1943 — NUMBER 7

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Simplicity of Design Means Easier Maintenance

Valves Respond to Good Treatment Take Care of Those You Have

Nowadays when the valves you have must do double duty it is just good business to do a little extra checking of this vital equipment.

Even the best valves need looking after, and prompt servicing when necessary will save more costly repairs and replacements later.

Lunkenheimer Valves are easy to keep in good operating condition.

Simplicity of design, with few working parts, makes them readily accessible for inspection and maintenance follow up.

Again we say, take care of the valves you have. They'll respond to good treatment and repay you in better service, less time out for repairs, and a minimum expenditure for maintenance.

A Lunkenheimer distributor is near you to help you get what you need. His complete facilities are at your service.

Bronze Double Disc Gate
Rising Stem

Bronze Wedge Disc Gate
Non-rising Stem

ESTABLISHED 1862

THE LUNKENHEIMER CO.

"QUALITY"

CINCINNATI 14, OHIO, U. S. A.

NEW YORK CHICAGO
BOSTON PHILADELPHIA

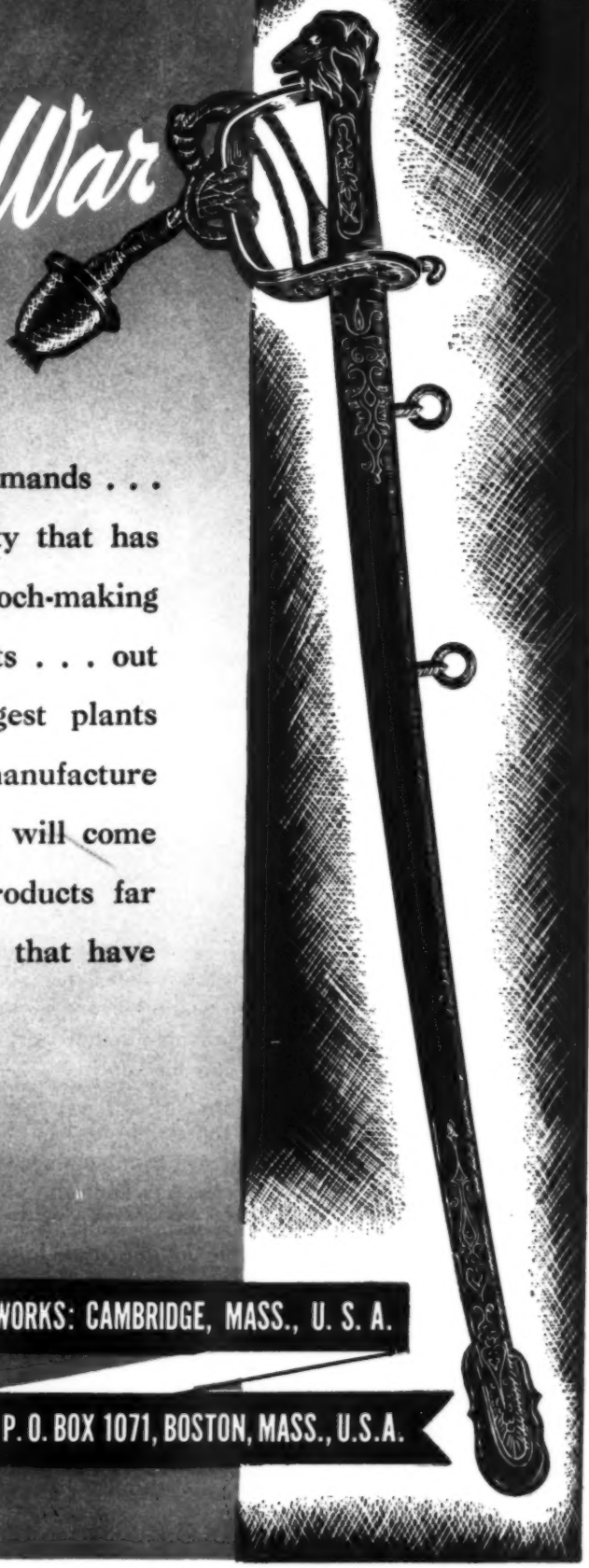
EXPORT DEPT. 318-322 HUDSON ST., NEW YORK 13, N. Y.

If fits perfectly . . .

One body takes either the rising stem or non-rising stem trim assembly. A timely feature when it's necessary to convert from one type to the other. Simply loosen the trim assembly and lift out. The body remains in the line.

BRONZE, IRON, STEEL AND CORROSION RESISTANT ALLOY VALVES, 125 TO 2500 LB. S.P.; BOILER MOUNTINGS, LUBRICATING DEVICES, AIRCRAFT FITTINGS. ASK FOR CATALOG 78

WHEN THE *Sword of War* IS SHEATHED



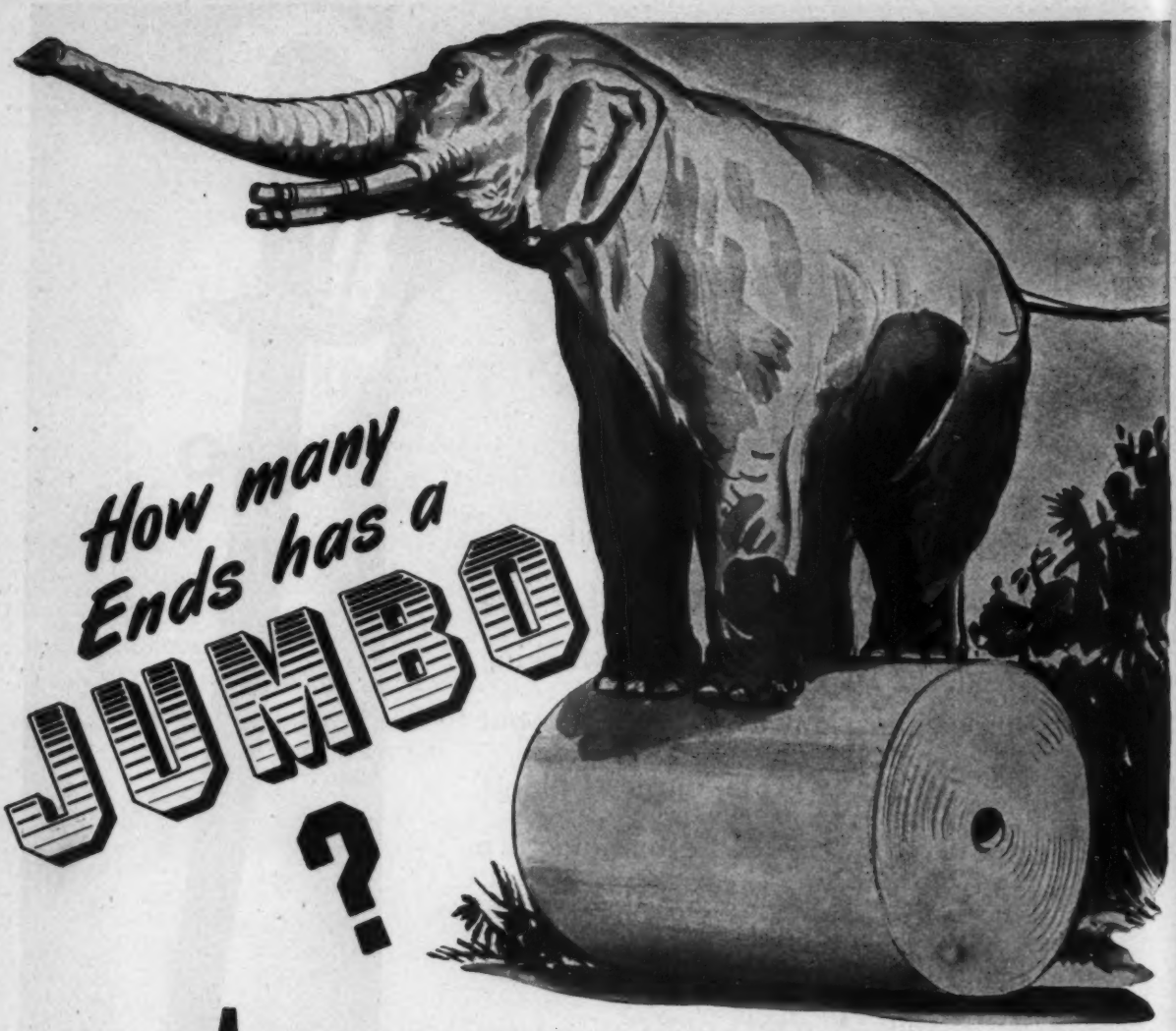
Out of war's insatiable demands . . . out of experience and ability that has made rubber history in epoch-making inventions and improvements . . . out of one of the world's largest plants devoted exclusively to the manufacture of mechanical rubber goods, will come belting, hose and similar products far surpassing the world's finest that have come so far.

BOSTON WOVEN HOSE AND RUBBER COMPANY

BWH

WORKS: CAMBRIDGE, MASS., U. S. A.

P. O. BOX 1071, BOSTON, MASS., U.S.A.



Ask the man at the slitter. He knows that there is an end for every break in the sheet as it travels through the paper machine. The machine operator knows that most breaks occur where there are soft spots in the sheet. And soft spots are the result of incomplete removal of water. The customer knows that a roll with many ends is poor merchandise.

Hamilton Felts remove water uniformly — and fast. They give stronger formation to the sheets and reduce broke to the minimum. Machine tenders, slitters and customers have few ends to bother with — little time wasted.

From the thinnest tissue to the heaviest board there is a Hamilton Felt that will do your work better, faster and at lower cost.

SHULER & BENNINGHOFEN, HAMILTON, OHIO

• Miami Woolen Mills •

Hamilton Felts

• Established 1858 •

THE BIG THREE
of Rollway's Right-Angle Bearing Loading

1. GREATER BEARING CAPACITY

2. LOWER STARTING TORQUE

3. REDUCED MAINTENANCE TIME

Whether it's heavy radial loads or thrust loads . . . constant loads or shock loads . . . that are bothering you, change-over to Rollway Precision-Type Cylindrical Roller Bearings offers a quick, easy way to achieve: 1—more bearing capacity; 2—lower starting torque; 3—improved service from a maintenance standpoint. ALL within the dimensional limits of your present sleeve-type bearings.

RADIAL
THRUST
For longer bearing life, more efficient performance and more economical maintenance . . .
FOLLOW THIS BASIC BEARING PRINCIPLE
● All radial loads carried at right angles to the roller axis.
● All thrust loads carried at right angles to the roller axis.

Right-Angle Loading Simplifies the Stresses

Simplification — that's the answer back of the increased capacity and life of Rollway's Cylindrical Roller Bearings. For Rollway splits every load into its two simple components of *pure radial* and *pure thrust—carrying each of these on separate bearing assemblies at right angles to the roller axis.* That eliminates compound loads, oblique loads, and the resultants of compound forces. The total magnitude of stress carried per roller and per bearing is substantially less. Rollers and races stand up longer. Lubrication is simplified. And the cylindrical rollers eliminate all tendency to pinch out between the races, greatly reducing end-rub and wear-back of the roller head.

Standard Sizes for Most Applications

S.A.E. or American Standard metric dimensions and tolerances in a wide range of sizes and types assure low cost and ready availability for most applications. Let Rollway engineers recommend the types best suited for your needs. Just send drawing or detailed description. No cost or obligation for this helpful service.

ROLLWAY BEARING COMPANY, INC., SYRACUSE, N. Y.

BUILDING HEAVY-DUTY BEARINGS SINCE 1908 — **BEARINGS**

A Chip of the Old Block

"Like father, like son." Tony Nagurski, sturdy three-year-old, follows the example of his famous dad, as the former Minnesota and pro football star prepares for his comeback with the Chicago Bears by cutting pulpwood for the Minnesota and Ontario Paper Company, International Falls, Minnesota. "Bronko" took an active part in the Victory Pulpwood Campaign to relieve the critical shortage of pulpwood.

TRADE WINDS

Government Reduces Paper Usage

▸▸▸ THE GOVERNMENT of the United States, as well as the newspaper, magazines, book publishers and commercial printers, is curtailing its use of paper. The Federal savings, as reflected in orders to the Government Printing Office, are estimated at about 25 per cent of annual paper usage.

Efforts of federal bureaus and agencies to curtail their use of paper and also to save essential wood pulp from which paper is made, are reflected by reports recently made to Harold Boechenstein, Co-ordinator of WPB activities involving production and conservation of pulpwood, pulp, paper and paper products.

A saving of 7,800,000 pounds of printing papers and approximately 182,000,000 pounds of chemical wood pulp is reported by the Public Printer covering the GPO printing jobs for the federal agencies during the fiscal year 1943. The reduction of government orders is estimated by the GPO at approximately 25 per cent.

Writing paper mills, manufacturing bond, ledger, mimeograph, duplicator and flat writing papers, report a 24 per cent reduction in government orders placed during the four-week period from August 14 to September 4, as compared to the preceding four-week period. From a percentage standpoint, covering government tonnage percentage of total paper production by the writing paper mills, this is the largest paper segment affected by federal consumption, it was explained.

The big drop in consumption of paper by the governmental agencies is the result of strenuous pruning by the Bureau of the Budget staff in support of the WPB policies regarding conservation of paper among the several agencies.

Another index as to what governmental conservation is accomplishing is revealed in a statement from Robert C. Clark, Chief of the WPB Printing and Distribution Control Branch, who reports a saving of approximately 1,000 tons of critically scarce paper per year, and a quarter of a million dollars, not to mention a great saving in manhours, transportation and storage space. This was accomplished by a more economical distribution of forms, revision of 3,200 mailing lists, establishment of minimum quantities in printing orders, elimination of certain field work, salvage, etc. He is confident that a saving of fully 25 per cent of critical paper, the Federal Government's goal, can be effected annually. The WPB quota of paper saving is 5,000 tons per annum.

Some of the economies reported by the Public Printer on federal paper conservation will effect the following approximate annual savings:

More than 178,700,000 pounds of bleached chemical wood pulp through substitution of unbleached chemical wood pulp and groundwood in sulphite papermaking;

Several million pounds of chemical wood pulp by increasing the ash content from 2 to 5 per cent in specifications for rag manifold, bond, ledger and index papers;

Three million pounds of paper, through substitution of light for heavy weight print papers;

Four million pounds of paper as a result of elimination and size revisions, and

Eight hundred thousand pounds of paper by introduction of half and three-quarters sizes of letterheads.

GPO conservation measures instigated nearly two years ago include:

Substitution of unbleached pulp for bleached; Elimination of eleven grades of papers from paper schedule; Reduction of brightness standards to save chlorine; Use of lighter weights of paper; Reduction of number of sizes and standardization of letterheads, scratch-pads, forms and blank paper; Curtailment in use of chipboard and newsboard; Reduction in number of copies of letters and forms; Utilization of both sides of sheets and single spacing in office memos, mimeographing and other duplicating processes; Reduction of margins in letters and forms; and Elimination of wrapping when unnecessary, and limitation of inventories to three months where practical.

On July 1, 1943, the GPO also reduced the weight of envelopes by about 20 per cent.

◆

WPB REORGANIZATION IS NOW EXPECTED

As this issue was ready for the press, the American Paper and Pulp Association reported that an official announcement of changes in reorganization of the WPB may be expected shortly. Authorized reports (according to the APPA) state there will be four divisions co-ordinated by Harold J. Boeschenstein, with A. G. Wakeman, former chief of the Paper Division as a member of Mr. Boeschenstein's staff.

The four divisions, it is said, will be paper, paperboard (including kraft board, corrugated board, containers and folding and set-up boxes), pulpwood production (including waste paper), and pulp allocation.

▶▶▶ URGENT APPEALS from the paper industry for adequate consideration of the need for a greater output of pulpwood have been officially recognized by the appointment of A. G. Hansen, deputy administrator for pulpwood production in the Pulp and Paper Division of the War Production Board as a member of the committee of the Timber Production War Project, being administered by the Forest Service. This project is devoted to getting out lumber and timber products by the use of a special $1,000,000 appropriation authorized at the last session of Congress. At first the Project officially listed only lumber and lumber products as its objective, but with the appointment of Mr. Hansen, pulpwood is given an equal share in the program.

◆

TECHNICAL ADVISORY SERVICE FOR SMALL PLANTS — BY SWPC

A recent announcement by Brigadier General Robert W. Johnson, chairman of the Smaller War Plants Corporation, revealed that a Technical Advisory Service has been established by the SWPC to serve the interests of small plants. This service will be set up by regions throughout the country and will put at the disposal of the small manufacturer who requires technical research in the solution of a production problem, information drawn from governmental agencies, trade associations, technical and scientific organizations, technical magazine editors, and the research laboratories of educational institutions and private industry.

The Technical Advisory Service springs from an idea which has been successfully applied in private business since 1937 by Bert H. White, vice president of the Liberty Bank of Buffalo, Buffalo, New York. Mr. White is now on leave to serve as a major in the Army Air Forces, from which he was borrowed by SWPC to set up this service.

◆

▶▶▶ OFFICIAL CIRCLES are still looking forward to a possible limitation on the production of paper, with a possibility that all production will be restricted to paper considered essential for war purposes. While the officials hope that the pulpwood situation, the focal point for present difficulties, may be clarified, they are laying plans for limitations based on essentiality of paper, in case conditions require such drastic action. The industry is being asked to assist in making the preliminary determinations of uses under which use restrictions may be applied.

REGIONAL OFFICE AIDS TO STIMULATE PULPWOOD CUTTING

To stimulate pulpwood cutting in both the United States and Canada, aids will be assigned soon to seven WPB regional offices, according to an announcement on September 30 by A. B. Hansen, deputy director of the WPB's pulp and paper division.

The offices to which the aids will be attached are: Seattle, Washington; Green Bay, Wisconsin; Boston, Massachusetts; Charleston, West Virginia; New Orleans, Louisiana; Atlanta, Georgia, and Ottawa, Canada.

◆

3 MILLS IN FLORIDA TO AID REFORESTATION

Three Florida paper manufacturing companies will co-operate with the Florida State Forestry Department and the State Extension Service in distributing a total of 1,700,000 free pine seedlings this year to schools and landowners for reforestation work.

For the third year, the Container Corporation of America, with plant at Fernandina, will supply 1,000,000 seedlings for planting in Northeast Florida. The International Paper Company, at Panama City, will distribute 400,000 in West Florida counties, and the Florida Pulp and Paper Company, of Pensacola, will distribute 300,000 in Escambia and Santa Rosa counties.

Assistant State Forester C. H. Coulter has promised that the State Forestry Department will give advice on planting methods and lend necessary tools for the purpose. Planting will begin in December. All seedlings will come from the forest service nursery at Olustee, and recipients of seedlings agree to plant them in keeping with good reforestation practices and not to use them for ornamental or beautification purposes.

◆

HAMMERMILL PLANS POSTWAR EXPANSION

Through the medium of its magazine, *The Hammermill Bond*, the Hammermill Paper Company, of Erie, Pennsylvania, informed its employees that the company has plans under way now for a postwar expansion program involving the expenditure of $2,000,000 for equipment and facilities. A major item on the list of postwar projects is the expansion of the mill's power plant at a cost of $500,000.

Six postwar committees, made up of Hammermill officials, have been formed to study future plans for the paper company.

The announcement to employees said: "That there will be some kind of economic jolt when we return to peace is an expected turn of events, and our postwar planning must be done so effectively that this jolt can be cushioned to the greatest possible degree.

"The bright side to the future is that Hammermill is an industry of peace—even as it is of war. At war's end there may be no demand for tanks, but there will be a need of paper for business."

◆

SECOND CUT OF FIVE PER CENT IN NEWSPRINT

A new amendment to Order L-240 imposes a second reduction of 5 per cent on newsprint. The first 5 per cent cut was effective for the third quarter.

This reduction follows the recommendations of the Newspaper Industry Advisory Committee announced by the WPB on September 2, with which the Labor Advisory Committee concurred on September 17.

In calculating the total reduction effective beginning October 1, newspaper publishers will take into consideration the first cut and combine it with the 5 per cent now ordered.

◆

FINANCIAL

Paper mill securities showed improvement during September comparable to the generally better feeling in the stock and bond markets. An outstanding feature was the increase in the price of International Paper preferred which rose ten points in the month, doubtless with the removal of the restricted price levels formerly imposed on newsprint.

Certain-Teed Products Corporation—Net profit for the first half of the year was $240,676 as compared with $568,609 for the same period in 1942.

Crown Zellerbach Corporation—Net profit for the second quarter was $1,839,702 as compared with $1,803,147 for the same quarter in 1942.

National Container Corporation—Net profit for the first half year was $361,625 as against $418,060 for the same period in 1942.

Puget Sound Pulp and Timber Company—Net profit for the first six months of 1943 was $236,598, as compared with $454,579 for the same period in 1942. Pulp production, however, increased the second quarter as compared with the first quarter of the current year, and net income was proportionately higher.

Rayonier, Inc.—Net profit for the second quarter was $454,000 as compared with $550,493 for the same quarter last year.

PAPER · · · America's 6th Industry

PAPER BRINGS ARMY "CHOW"

(NEWS ITEM: Multiwall, or heavy-duty paper bags, are replacing steel drums, cans and metal containers for shipping food to our troops overseas.)

To keep our Army eating well and yet conserve war-vital materials, the Paper Industry is producing thousands of multiwall leakproof bags to ship food overseas.

Multiwall bags keep emergency rations and dehydrated foods in a sound, wholesome condition whether they are sent to the tropics or the Arctic. Even liquids are safe in these heavy Kraft bags.

The Paper Industry is continually experimenting on paper containers . . . helping to keep our Armed Forces the best fed men in the world.

Puseyjones engineers offer their whole-hearted cooperation to mills engaged in serving the war effort.

Puseyjones "Rapidrape" Wire Handling is a new, easy way to drape Fourdrinier Wires. Production formerly lost through shut-downs is reduced to a minimum because the handling time is shortened.

The Fourdrinier part remains in perfect alignment at all times, adequately supported at front and back.

The many practical and technical advancements we are learning while serving the war effort will result in greater improvements and more efficient equipment in our Post-War Paper Making Machinery. In the meantime—until the Victory is won—Puseyjones men and production facilities are still on war work.

PLANNING AHEAD? For paper and pulp mill executives looking forward to post war production problems, we will gladly furnish reprints of three informative articles prepared by Puseyjones engineers — "The Post-War Fourdrinier Machine," "Development of Stream-Flow Vat System," "The Flow Spreader." Ask for reprints by name.

THE PUSEY AND JONES CORPORATION
Established 1848. Builders of Paper-Making Machinery
Wilmington, Delaware, U. S. A.

THE SIGN OF TRADE MARK SUPERIOR QUALITY

Soundview Pulp Company—Net income for seven months to July 31 was $514,954 as compared with $630,310 for the comparable period in the previous fiscal year.

Southern Advance Bag & Paper Company—Net income for the first half year was $307,951 as against $373,665 for the first half of 1942.

United Wall Paper Factories, Inc.—Net profit for the year to June 30 was $394,792 as against $560,882 in the previous year.

New York Stock Exchange—Stocks

	Closing Prices Sept. 25, 1943	August 25, 1943
A. P. W. Paper Co.	1⅞	*1⅞–2½
Celotex	13	12⅞
Same Preferred	18	19
Certain-Teed	6⅜	5⅞
Same Preferred	64¾	62½
Champion P. & F. Co.	21	20
Same Preferred	107½	*107–107¼
Container Corp.	21	19⅛
Continental Diamond.	12⅜	*12–12¾
Crown Zellerbach	16	15⅛
Same Preferred	98	98¼
Dixie Vortex	15½	*12¾–13⅜
Same "A"	48	44¼
Robert Gair	3	2½
Same Preferred	12½	*12–12¾
Gaylord Container	12⅜	*12⅞–13¼
Same Preferred	52	*51¼–52
International Paper	13¼	10⅜
Same Preferred	67¾	57⅜
Kimberly-Clark	31⅜	32
MacAndrews & Forbes	28¼	*26–26¾
Masonite	38½	37⅜
Mead Corp.	8¾	8
Same Preferred	86	84
Paraffine Cos.	44¼	*41½–43
Same Preferred	102	101
Rayonier	14⅛	13¼
Same Preferred	31¼	*31–32
Scott Paper	41⅜	*41½–43
Same 4½% Pfd.	112	*111–113
Same 4% Pfd.	111	*111–112¼
Union Bag & Paper	10¾	9⅛
U. S. Gypsum	75	*68–68¼
Same Preferred	176	177½

New York Stock Exchange—Bonds

Abitibi 5%	69	.....
Celotex 4½%	101¼	.....
Certain-teed 5%	101¼	101¾
Champion P. & F. Co. 4½%	.....	.....
International Paper 5%	104	104⅛
Same 6%	107	106

New York Curb Exchange—Stocks

Am. Boxboard	7⅞	.....
Great Northern	34⅜	.....
Hummel-Ross	4¼	3⅛
St. Regis	3⅜	3⅛
Taggart	4	3¾
United Wall Paper	2⅜	2½

*Closing Bid and Asked Prices.

◆

▶▶▶ AWARD OF THE Army-Navy "E" pennant was made to the Masonite Corporation, Laurel, Mississippi, in February of this year. Last month the Navy Board awarded the company a white star, an additional honor in recognition of a high production record for six months ended June 15.

Government to Redistribute Used or Idle Machinery

▶▶▶ A COMPREHENSIVE PROGRAM for redistribution to essential uses of upwards of an estimated billion dollars worth of used or idle machinery and equipment, much of it now owned by the Government, was announced September 16 by the War Production Board.

The huge "brokerage-without-fee" business, organized by WPB's Redistribution Division, is to be a decentralized operation, conducted by the staffs of WPB Regional Offices. An innovation to be introduced by the program will be negotiated sales, under OPA price regulations, of government-owned equipment. Such sales will be made to ultimate users certified by WPB to be eligible to purchase. Sales of government property to dealers will continue to be made on the customary bid basis.

Inventories of more than 55,000 types of machinery and equipment, available for purchase by anyone who qualifies under existing regulations applying to used or idle production equipment, will be filed in WPB regional offices. These inventories are being compiled from reports from used equipment dealers, voluntary listings by user-holders, the War Department, Treasury Procurement Division, Defense Plant Corporation and other government agencies. In all, some ten million pieces are expected to be listed, ranging from WPA sewing machines to industrial boilers and manufacturing equipment rendered idle by program changes.

When applications for authority to purchase new equipment are received by WPB field offices, they will be checked against the inventory lists and the applicant put in touch with owners of available equipment. When sales are consummated, following this procedure, they will be the result of negotiation between buyer and seller, subject only to OPA ceiling prices. Under recent WPB orders, applications for authority to purchase many types of new equipment must be accompanied by certifications to the effect no used equipment is available.

Requests for new equipment also will be checked against the files of the region in which they originate. If these files do not disclose the desired material, the redistribution division will, when the need is urgent, send out want lists to all regional offices and to dealers, requesting location of the specific items.

Redistribution officials point out that the entire program is built around normal methods of doing business through customary trade channels. Its purpose, they say, is to provide assistance to those needing equipment immediately and at the same time to conserve the materials, manpower and facilities that would be required to fill these needs with new machinery.

To the extent that it is successful, the program is expected to hold down the size of the postwar problem of liquidation and absorption.

A comprehensive set of questions and answers concerning the program has been prepared by the redistribution division for use by the regional offices, to which all inquiries should be addressed.

◆

HOUSE ORGANS FOR OVERSEAS STILL AT 3RD CLASS RATE

The Association of National Advertisers announces that it has been informed by the Post Office Department that house organs, or employee publications, do not come under the ruling made July 1, 1943, which ruling provides that advertising and circular matter mailed at the third class rate of postage will not be dispatched to the personnel of the Navy, Marine Corps and Coast Guard overseas.

The Navy Department will continue to accept such publications as third class matter provided the wrappers or envelopes are indorsed "House Organ" and that they also bear a printed or rubber stamp inscription in the lower left corner of the address side reading "No advertising or circular matter enclosed." It is intended that house organs or employee publications mailed under these provisions should be sent only to former employees of the company publishing the house organ.

◆

WILMINGTON PLANT REOPENED BY THE CONTAINER CORP.

About a year and a half ago, the Container Corporation of America, Chicago, bought the plant of the Delaware Paper Mills, near Brandywine Park, Wilmington, Delaware. The middle of September the plant was reopened with the approval of WPB. The Container Corporation will manufacture paperboard; one of the two paper machines is now in operation.

William P. Hooker, formerly of Chicago, has been appointed general manager.

The source of finer paper-making chemicals . . . since nineteen hundred and seven . . . . .

PAPERMAKERS CHEMICAL DEPARTMENT

HERCULES POWDER COMPANY

INCORPORATED

WILMINGTON, DELAWARE

Boston, Mass. Holyoke, Mass. Albany, N. Y. New York, N. Y. Atlanta, Ga. Savannah, Ga.
Jacksonville, Fla. Marrero, La. Detroit, Mich. Kalamazoo, Mich. Milwaukee, Wis. Chicago, Ill.
Portland, Ore. San Francisco, Calif. Freeman, Ont. (Hercules Powder Co., Canada, Ltd.)

SUPERIOR PMC CHEMICALS

U. S. DEPT. OF COMMERCE ISSUES NEW ADV. BOOKLET

It is quite generally agreed by business in general that advertising in wartime takes on a new significance. Now, more than ever, it is realized that sound advertising will blueprint the future of industry and business in this Nation as well as the commerce of the world.

A book just released by the United States Department of Commerce is entitled "Advertising and Its Role in War and Peace." This book, known as Industrial Series No. 5 was compiled by Corrie Cloyes, Division of Commercial and Economic Information. It has been designed to provide the reader with a well-rounded compilation of attitudes toward advertising as expressed by various officials and representatives of the Government. There are excerpts of speeches by well-known authorities and articles reprinted from national magazines, all of which deal with important phases of this subject, so vital to American business men.

The book is available from the Government Printing Office.

◆

MEXICAN INTERESTS BUY IROQUOIS MACH'Y

Sale of two paper machines and the pulp grinders of the old Iroquois Pulp and Paper Company, at Thomson, New York, to Garza Brothers, a large lumber and papermaking firm in Monterrey, Mexico, was announced September 9. It was stated the equipment would be shipped to the Mexican city for installation in a huge new mill there.

The mill property at Thomson was purchased by the A. & P. Corrugated Board Corporation, of Lowell, Massachusetts, which planned to install larger machines and operate the plant, according to announcement by H. L. Joachim, a member of the purchasing firm.

It was revealed that the Sandy Hill Iron and Brass Works of Hudson Falls, New York, will design and place the plant in operation in Monterrey. The new Mexican plant, according to the announcement, will be designed primarily for production of kraft paper, but toweling and light board also will be made. The mill will be designed with an idea of expanding it eventually to a 10-machine plant.

Mexico formerly looked to England and Germany for heavy machinery, but since the war started the Mexicans have turned to the United States for their needs. It was said the machinery from the Thomson mill will be shipped to Monterrey as the new plant construction progresses. The new mill will be the first of its kind in northern Mexico. There is a large supply of wood near the site, but it will have to be treated with a special process to make it adaptable to papermaking.

◆

POWELL RIVER CO. GIVES AWARDS FOR EMPLOYEE IDEAS

Since the initiation of the suggestion division of the recently-formed Union Management Committee in the Powell River Company's plant at Powell River, British Columbia, considerable attention has been devoted to the development of the ideas put forward by employees for betterment of working methods and mechanical equipment of the mill.

Recently an operator in the steam plant was handed a check for $100 by Russell M. Cooper, general superintendent, for the perfection of a simple machine for cleaning boiler bricks without the former laborious method and without the accompanying danger to the eyes of the operators.

Awards of $20 were made to J. A. Littler of the grinder room for suggestion of an improvement on grinder bridge trees and to Doug Johnson of the grinder room for his suggestion of light signals for control of the block carrying jeeps to the grinders. Smaller awards were also given Charles Garrett, W. D. Slater and C. C. Searle for valuable suggestions.

◆

BOXBOARD PLANT MACHINERY WILL GO TO VENEZUELA

A press report recently published states that three months ago the equipment of the Union Box Board Company plant in Unionville, Connecticut, was bought by South American interests who would ship it to Caracas, Venezuela.

The report further states that George J. Forman, who had served as general manager of the plant at Unionville for eight years past, would go to Venezuela where he will supervise the erection of the mill and install the machinery. After the plant has been made ready for operation, Mr. Forman will act as general superintendent and will instruct native personnel in its operation.

Mr. Forman has had 35 years of experience in paper mills in the States and Canada and holds a number of patents on papermaking machinery.

When the machinery has been removed from the Unionville plant, Mr. Forman stated the buildings will be sold.

FORESTRY PROGRAM IN SOUTHERN STATES SPONSORED BY WPB

Southern paper mill operators, faced with a growing shortage of pulpwood, gleaned encouragement from an announcement by United States Regional Forester Joseph C. Kircher of Atlanta, Georgia, that funds from a $1,000,000 congressional appropriation have been allocated for expansion of the forest service program of assistance in pulpwood production in the eleven states comprising the southern region.

Funds will be used to increase the scope of assistance rendered to landowners and mill operators alike in selective cutting methods and in making available stumpage suitable for war needs, and mills will be assisted in solving problems of equipment, transportation, and labor shortages.

◆

▶▶▶ THE BOSTON OFFICE of Hollingsworth & Vose Company will be discontinued November 1. All communications should be addressed to the company at its general office, East Walpole, Mass.

◆

▶▶▶ ARRANGEMENTS HAVE BEEN COMPLETED between the Boeing Company and the Powell River Company, Limited, Vancouver, British Columbia, by which the latter company will make assembly of certain small parts for bombers at its plant at Powell River. Already, twelve local women are under training for this war work under the jurisdiction and instruction of the War Emergency Schools, and it is expected that the number will soon be increased to twenty-five. The Powell River Company is having its large No. 3 newsprint storage shed revamped to meet the requirements of the work.

◆

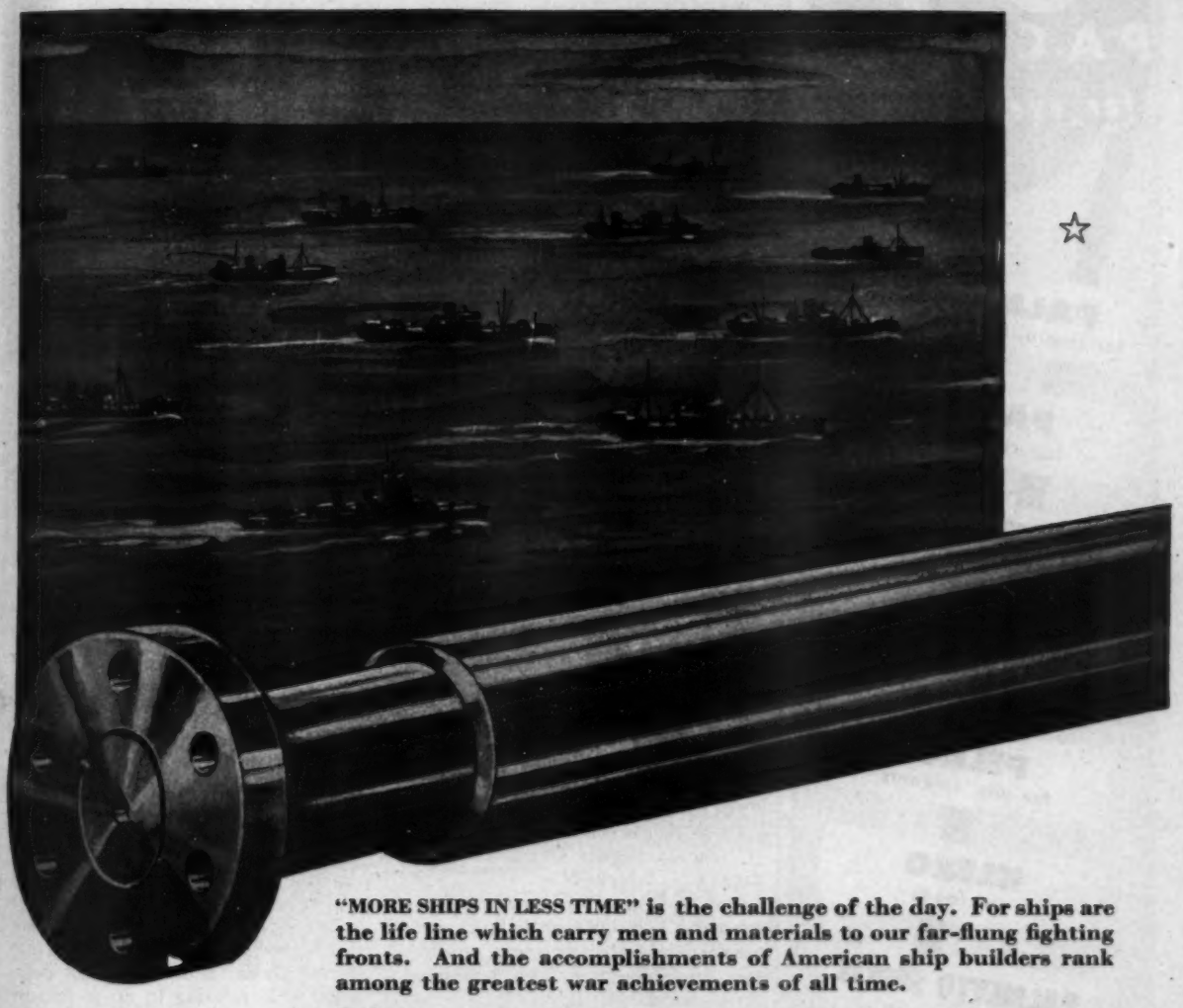
CHAMPION EMPLOYEES HOLD WARTIME CARNIVAL

Because the picnic held annually by the employees of The Champion Paper and Fibre Company (Hamilton, Ohio) has been discontinued because of inadequate transportation facilities, it was necessary to substitute some other form of recreation and entertainment for the Labor Day week end.

The answer to this question proved to be a Wartime Carnival staged at the Hamilton fairgrounds September 3 to 7. This attraction provided entertainment for the stay-at-home public, but more than anything else, the proceeds were given to the local War Chest or other Wartime Charities.

The several divisions of the Carnival included the Midway with its

SHAFTS *for our Ships of War...*



"MORE SHIPS IN LESS TIME" is the challenge of the day. For ships are the life line which carry men and materials to our far-flung fighting fronts. And the accomplishments of American ship builders rank among the greatest war achievements of all time.

Today, we are proud of the part we are playing in this great ship building program. For, here at Jones, we've been under way at full speed ahead, for over a year, in supplying propeller shafts for cargo ships. And we are also devoting every ounce of our energy and the full measure of our skill in building parts for other war equipment until victory is won.

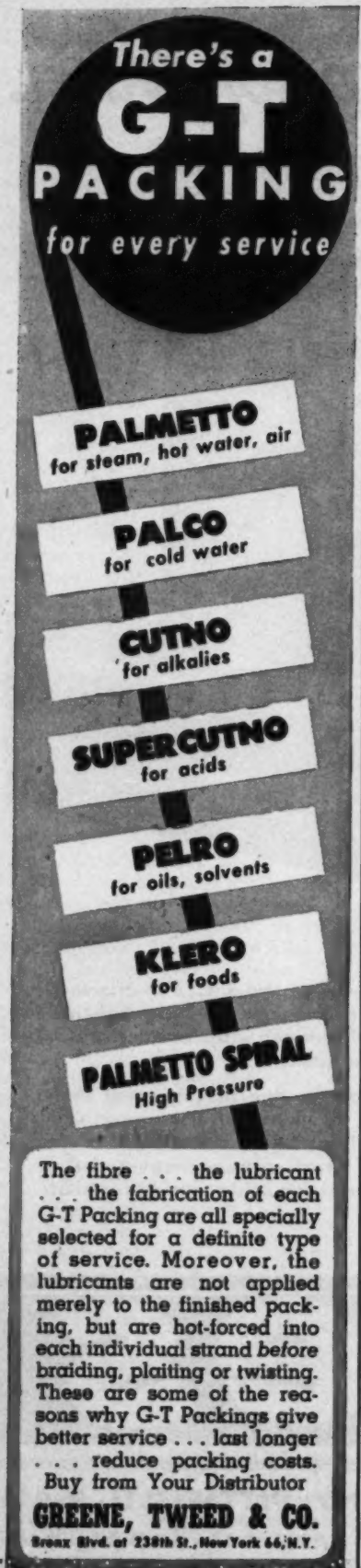
FOR VICTORY BUY UNITED STATES WAR BONDS AND STAMPS

Jones

GEARED FOR WAR PRODUCTION

E.D. JONES & SONS COMPANY-PITTSFIELD, MASS.

Builders of Quality Machinery for Paper Mills


There's a
G-T
PACKING
for every service
PALMETTO
for steam, hot water, air
PALCO
for cold water
CUTNO
for alkalies
SUPERCUTNO
for acids
PELRO
for oils, solvents
KLERO
for foods
PALMETTO SPIRAL
High Pressure
The fibre . . . the lubricant . . . the fabrication of each G-T Packing are all specially selected for a definite type of service. Moreover, the lubricants are not applied merely to the finished packing, but are hot-forced into each individual strand *before* braiding, plaiting or twisting. These are some of the reasons why G-T Packings give better service . . . last longer . . . reduce packing costs.
Buy from Your Distributor
GREENE, TWEED & CO.
Bronx Blvd. at 238th St., New York 66, N.Y.

many games and attractions; Hobbies —Both creative and collective hobbies of Champion employees or their families; The Home at War—There were sewing, Victory gardens and canning exhibits on display; The Community at War—Civilian Defense; Champion in the War—Booths for War Bonds, Champion products and safety displays, and an elaborate Honor Roll of the 466 Champion men and women in the service; Special Events—This included the Miami Naval Training School Chorus of 36 voices, soft ball games, pony track, games, movies, flower show, and Old Timers' booth.

A novel way to combine recreation and entertainment and also aid the war effort.

◆

NEWSPRINT ADVISORY COMMITTEE APPOINTED

Six representative newsprint manufacturers, representing over 80 per cent of the U. S. newsprint capacity, were appointed September 29 by the OPA to serve as members of a Newsprint Industry Advisory Committee.

The members of the committee are:

J. D. Zellerbach, president, Crown-Zellerbach Co., San Francisco, Calif.

E. L. Kurth, president, Southland Paper Mills, Lufkin, Texas.

John L. Hobson, treasurer, St. Croix Paper Co., Boston, Mass.

Samuel Pruyn, sales manager, Finch, Pruyn Co., Glens Falls, New York.

Harold Smith, president, Maine Seaboard Paper Co., New York, N. Y.

C. B. Stanwood, assistant manager of manufacturing, Great Northern Paper Co., Boston, Mass.

This committee has been appointed to consult with OPA on industry matters that should be taken into consideration in connection with newsprint price control.

◆

VICTORY SCRAP BANK

The War Production Board has announced a new "all-out" scrap drive and the establishment of Victory Scrap Banks throughout the nation to insure a steady flow of iron and steel scrap to the consuming mills. According to a statement by WPB Chairman Donald Nelson, consuming steel mills and suppliers have on hand an inventory of about 7½ million tons, which will last only two months. The new drive runs from October 1 through November 15.

In the words of Mr. Nelson, "the public will be urged to regard these 'Victory Scrap Banks' as sources of 'metallurgical blood plasma,' guaranteeing a continuing flow of vital war armaments so urgently needed for the successful continuation of our military ventures abroad."

There is no specific "tonnage goal" set for the Victory Scrap Bank campaign. The objective for this fall drive is to establish community stockpiles from which reserve the consuming mills can draw scrap supplies as needed.

◆

SPECIAL CLASSES AT RENSSELAER SPONSORED BY WEST VA. P&P CO.

A course of study in engineering, science, and management, recently offered at Rensselaer Polytechnic Institute, Troy, New York, will be sponsored by the West Virginia Pulp and Paper Company, Mechanicville, New York.

More than 100 employees of the West Virginia Company are registered for the course which covers all types of business management and will include problems relating to all phases of the papermaking industry and other fields of industrial activities.

◆

CANADA SEEKS TO CLARIFY SERVICE STATUS OF FARMERS

A delegation representative of the Canadian Daily Newspapers' Association and of the pulp and paper industry of Canada held a two and one-half hour conference with members of the Dominion Cabinet at Ottawa on September 21 to urge further clarification and simplification of selective service regulations applying to farmers, as a means of avoiding a potential 20 per cent production shortage.

The delegation told the government that farmers who normally go into the woods in the winter to cut pulpwood were refusing to do so because they feared their compulsory service deferment as farmers would be prejudiced. They were told that the government was thoroughly aware of the problem and would do its best to meet it.

◆

▶▶▶ A THREE-MAN COMMITTEE was announced on September 19 by Premier Drew of Ontario. This committee will study the situation of the Abitibi Power & Paper Company. Premier Drew declared that in his opinion the company should be taken out of receivership and restored to some form of normal management, all of which would be in the public interest. Hon. Frank J. Hughes, K. C., of Toronto, will be chairman of the committee. The other members will be Dr. Gilbert Jackson, economist, and William Zimmerman, Toronto lawyer.

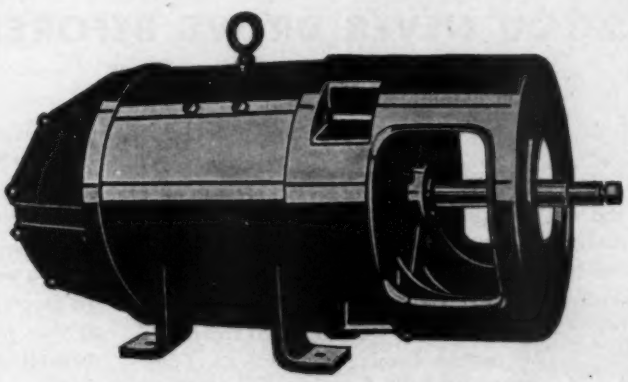
In the early days, this was the peak of streamlining.

STREAMLINING!

Streamlining adds more than beauty. For years, Reliance engineers have pioneered in streamlining electric motor-drives—*for utility and efficiency.*

Among recent developments are axial-flow fan motors, close-coupled pump motors, V*S Adjustable-speed Drive. These and other Reliance Motors are being used in many highly efficient paper mill installations where space is limited . . . where flexibility of power control and ease of operation are essential . . . where safety is a prime factor . . . and trim appearance desirable.

For further advantages of streamlined motor-drive and practical design suggestions, call in a Reliance man.



Reliance Splash-Proof D-c. Close-coupled Pump Motor. Pump is mounted right on the motor shaft—eliminates misalignment, saves space; fewer parts, less maintenance.

RELIANCE A·C D·C MOTORS

RELIANCE ELECTRIC & ENGINEERING CO.

1088 Ivanhoe Road • Cleveland, Ohio

Birmingham • Boston • Buffalo • Chicago • Cincinnati • Detroit • Greenville (S.C.) • Houston • Los Angeles • Minneapolis New York • Philadelphia • Pittsburgh • Portland (Ore.) • St. Louis • San Francisco • Syracuse • other principal cities.

AS YOU NEVER DROVE BEFORE!

Many a soldier owes his life to a commander who drove him to the utmost in battle—*never let him slacken for a single fatal instant!* And after the war, many a worker will owe his economic safety to a leader who drove him continuously for higher Pay-Roll allotments for the purchase of War Bonds!

Despite higher taxes and prices, the average worker still has more money than ever before—particularly on the basis of the *family* income. With others in the family earning, too, just let the worker 'figure it out for himself', and he usually will realize that *now* he can put more into War Bonds than he has been doing.

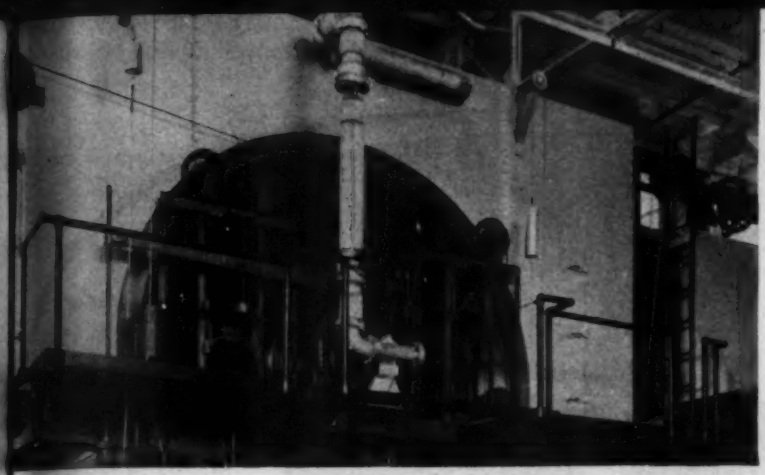
That's why the Treasury Department has set new quotas for the current Pay-Roll Allotment Drive—*quotas running about 50% above former figures.* These quotas are designed to reach the *new* money that's coming into the family income. Coming from millions of new workers . . . from women who never worked before . . . from millions who never before earned anything like what they are getting today!

The current War Bond effort is built around the *family* unit, and the Treasury Department now urges you to organize your War Bond *thinking*—and your War Bond *selling*—on the basis of your employees' *family* incomes. For details, get in touch with your local War Finance Committee which will supply you with all necessary material for the proper presentation of the new plan to your workers through your labor-management committees.

Today about 30,000,000 wage earners, in 175,000 plants, are buying War Bonds at the rate of nearly half a billion dollars a month. Great as this sum is, *it is not enough!* So turn-to today! Get this new *family income plan working!*

This Space is a Contribution to America's All-Out War Effort By

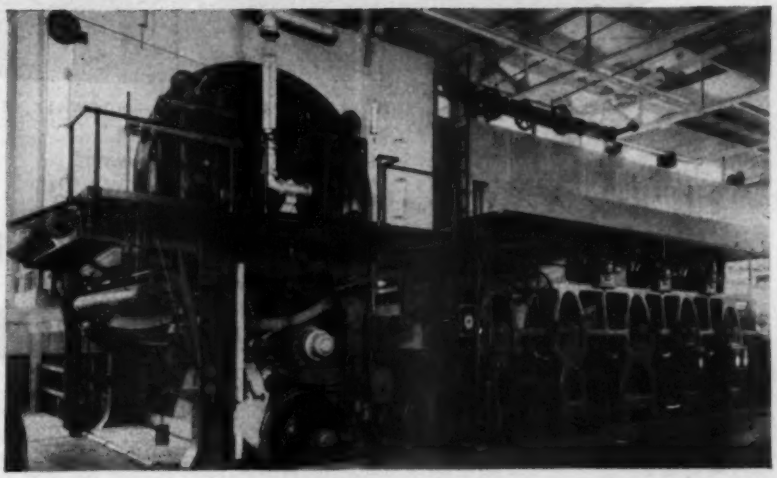
THE PAPER INDUSTRY and PAPER WORLD



Besides lubricating the 122,000 lb. Yankee dryer roll (left), Stanoil lubricates the twelve 7400 lb. standard rolls in the dryer section shown below. Oil is fed to the roll bearings through a circulating system at 35 lbs. pressure. A special oil purification system provides for the removal of water and other foreign materials from the oil.

This machine was recently installed at the Kalamazoo Vegetable Parchment Company plant for the production of food protection papers.

KVP selects Stanoil for 122,000 lb. dryer roll



● THERE'S NO PLACE around a big dryer like the one above for a lubricant of questionable quality. High temperatures and high bearing pressures require a constant flow of clean, stable oil. You can't take chances with deposits, clogged oil lines, and lubricant failures where paper speeds run as high as 1,000 feet a minute.

The Kalamazoo Vegetable Parchment Company picked Stanoil for this important job on the Yankee machine recently installed. Stanoil was selected because of the excellent results it gave on other hard-used equipment such as reduction gears, Jordans, and calender stacks at this plant.

Stanoil is a "natural" for paper mill lubricating jobs. It overcomes mill conditions that contribute to lubricating failures.

Excessive moisture. Steam and water are indispensable in paper making. Stanoil does not emulsify readily. Moisture from condensation or leakage in reduction gear units and circulating systems can easily be removed from Stanoil.

Heat and contamination. Stanoil has high stability—it resists chemical changes under heat and agitation that cause carbon and asphaltic deposits. Dust and foreign matter that enter the oil are readily removed by filtering.

Test Stanoil in some hard-to-lubricate spot in your mill. Let a Standard Lubrication Engineer help you. Call any local Standard Oil Company (Indiana) office, or write 910 S. Michigan Ave., Chicago 5, Ill., for the Engineer nearest you.

Oil is ammunition . . . Use it wisely

STANOIL

STANDARD OIL COMPANY (INDIANA) STANDARD SERVICE

★ LUBRICATION ENGINEERING

THE VANDERBILT LABORATORY—NORWALK, CONN.

In War Times Use the

VANDERBILT LABORATORY

★

Now, more than ever before, it is important to keep production at peak efficiency. Visit our laboratory, bring your problems and let our facilities help you solve them. Here, we can show you how our materials can be used to your best advantage. We invite and appreciate your cooperation.

★

R. T. VANDERBILT CO., INC.

230 Park Avenue, New York City

. . . . . Editorial . . . . . .

Wanted—Pulpwood Cutters

▸▸▸ THE PULP AND PAPER situation in the United States finally has been resolved into a comparatively simple proposition. From now on, the supply of paper in all divisions turns primarily upon the supply of pulpwood.

The supply of pulpwood is dependent entirely upon the supply of manpower in the forests to cut the wood. The supply of wood cutters is in the hands of the Selective Service and the War Manpower Commission.

The demand for more men for the Armed Services has been well publicized throughout the country during the past month due primarily to the proposition of drafting both pre- and post-Pearl Harbor fathers, backed by the Administration.

This proposal has met with active opposition in Congress and several bills have been introduced and more are forthcoming to compromise that situation. The Wheeler bill, which sought to defer all induction of fathers into the Armed Service until January 1, 1944 (or later) has been temporarily blocked and amending bills have been introduced. Congress is debating the proposition. Already it has had the advice from the top-flight military and naval authorities as to the necessity for more men in the Armed Service and the disposition of Congress is to give favorable consideration to the recommendations by our highest military and naval authorities. However, the discussion so far has tended to emphasize one fact in particular, and that is that more men must be forthcoming from some source.

In view of this condition, it becomes more and more evident to paper mill operators that the assignment of men for pulpwood cutting may not be forthcoming.

In the meantime, the mills in the north are making substantial inroads every month upon their reserve of pulpwood. It is generally estimated that unless substantial increases in the number of men for pulpwood cutting are forthcoming immediately, the mills of the north will have scraped the bottom of their wood piles within the coming six months—hence, a constantly decreasing supply of pulpwood, which means a constantly decreasing supply of paper.

Within the past month, the Government asked bids for paper covering the next quarter were opened in Washington. Only sixty per cent of the requirements received any bids, and in the case of kraft paper requisitions, no bids were received.

The demand for paper, not only for Government use, but for essential industry uses is increasing and the supply is decreasing. We are approaching the drastic crisis which has been predicted by the American Paper and Pulp Association and other authorities during the past summer.

We say that the proposition is resolving down into one simple factor—a supply of pulpwood cutters in the forests needed without delay.

Tomorrow's Paper Industry

▸▸▸ WHEN THE LAST BOMBS of the war have been dropped, when the last battle of the war has been fought, when soldiers, sailors, Marines, Wacs, Waves and Spars return to peacetime pursuits, what of the paper industry?

The contribution of the industry to the war effort cannot be stressed too strongly. The Armed Forces have called upon it to do practically the impossible; and it is remarkable how well it has succeeded. Paper is being used today by the Armed Forces for many purposes which only a few short years ago would have been entirely out of the question.

The opportunity for improving some of the papers being used, even for development of new papers, cannot be questioned. Such developments are under way all of the time.

The entire industry has dedicated itself to the winning of the War. It realizes that the better it can do its job, the sooner the war will be over; because upon it depends the safe delivery of so many instruments of modern warfare, of foodstuffs, of medicinal supplies, of a thousand and one things required by the combat forces.

Management, production and technology have worked and are working as one body that the industry may do its full share in the proper servicing of every activity connected with our fighting forces.

It is because of this concentration of effort that the question is raised about tomorrow's paper industry. If the industry is going to meet the conditions of a postwar world, it must plan now to do so. The security of the industry depends upon it. Herrick aptly put it, when he wrote: "Thus times do shift; each thing his turn does hold; new things succeed, as former things grow old."

A New Accident Problem

▸▸▸ THE PREVENTION OF ACCIDENTS is good business, and American industry—at least the larger plant units—long has been convinced of it.

A shrinking accident frequency rate, or no accidents at all, is followed automatically by increased efficiency just as surely as a dog is followed by its tail.

But a new accident problem has been born of present conditions. An accident suffered *off-the-job* keeps a man away from his work just as surely as an accident which happens on the job. The National Safety Council reports that last year while 18,500 workers lost their lives as a result of accidents on the job, no fewer than 26,500 were killed on the streets, in public places, and at home.

What is the off-the-job accident score of your employees? How does it compare with the on-the-job score in your plant? The National Safety Council has developed a new, complete, intelligent, educational program for industry to use in combating off-the-job accidents. This program has been studied and planned by experts, and it is highly recommended.

A Poll of Publishers' Opinions

▸▸▸ BECAUSE THE DEPARTMENT OF COMMERCE has told us that postwar purchasing power in this country has raised from seven and one-half billion dollars in 1940 to more than forty-three billions of dollars in 1943, and because that Department has estimated that at the present rate of accumulation, cash, bank deposits, government bonds, insurance, and other savings may well total up to 200 billions of dollars by the time the war ends, I sent a list of some fifteen questions to the publishers of 75 trade, technical and business papers in an effort to find out what *they*, the acknowledged leaders of their respective industries, thought of postwar conditions and possibilities. I received 54 replies, and the results, to me, were most illuminating. Following is a resumé of the replies:

Q—Should the European phase of the War be over in the next twelve months what, in your opinion, would be its effect?

To that query, 23 publishers said "general boom"; 14 said "temporary slump followed by a general boom"; 6 said "No material effect"; 2 predicted a "general slump." One said "don't know."

Q—What has been the plant or production-facility change in your industry due to the War?

Answers: 27 industries have expanded greatly; 10 have experienced some expansion; 7 remained the same; 5 experienced a shrinkage; 4 publishers did not reply.

Q—If "large expansion," how long will it require your industry to reconvert to a peacetime basis?

In reply to this question, 25 publishers said that their industry could effect reconversion in periods of from "overnight," or "immediately," up to six months. Three publishers said a full year would be required to reconvert to normal basis of operation; one said "two years," while 21 did not answer—largely because of their horizontal coverage.

Q—What percentage of your war plant facilities will have to be "dumped" on the open market at the end of the War?

It was most gratifying to have 32 of the 54 replies assure me that less than 15 per cent of existing facilities would have to be dumped on the open market. Indeed 15 publishers said "none," while 13 others said "5 per cent." Only two publishers gave alarming percentages such as "75 per cent" and "90 per cent."

Q—Do you anticipate government owned surpluses of manufactured articles at the end of the War?

Three publishers said "no"; 7 said "same as usual"; 6 said "less than peacetime." However, 26 said "larger than peacetime," and this would certainly indicate that for some industries the postwar period will bring competition from the Government.

Q—Are plans being made to dispose of those surpluses in ways that will prevent unemployment?

To that question only two said "little has been done." Six publishers assured me that "no plans are needed"; whereas 18 said "yes, by far-sighted manufacturers," with 12 saying "yes, by government planning."

Q—Is your paper taking a leading part in this subject?

While 11 said there was no problem to be discussed in their particular industries and 8 gave no reply, it is certainly significant that 32 publishers are taking leading parts in discussing that problem, either by editorials, special articles, or industry meetings and conferences.

Q—What is the general condition of plant machinery in your industry?

To this question 21 publishers said that the production equipment of their industry was pretty well shot from overwork and that, generally speaking, it was in bad shape for reconversion. This would indicate a boom period for plant equipment manufacturers and their jobbers or mill supply houses. Sixteen publishers said that the condition of plant machinery in their industries was in good shape for reconversion.

Q—Have leaders in your industry been active in development work which will enable them to exploit and market new products?

Here the overwhelming percentage gave firm assurance of remarkable degrees of new product and new market development work. Not only are new products being visualized by a large number of plants, but the firms planning them are to be found in every branch of industry. The over-all percentage of plants now actively engaged in planning or developing new products and new markets is no less than 49—and that, my friend, is heartening encouragement for the future. Couple this with the additional fact that today there exists a backlog demand of some 18 million radio sets, 10 million automobiles, 4 million refrigerators, 3 million washing machines, 3 million vacuum cleaners, and a million new homes PER YEAR FOR THE NEXT TEN YEARS—and you gain a faint glimmer of prosperity that will be ours during postwar years.

Q—Will there be a permanent broadening of markets for the products of your industry?

As might be expected, this question is a sequel to the preceding one—46 publishers answering an emphatic "yes," then continuing to give sound reasons for that assurance.

Q—Do you think Lend-Lease or something comparable thereto will be continued after the War?

Forty-three said "yes"; three said "no"; while the balance either didn't reply or said "don't know."

Q—If the answer to the previous question is "yes," how will it affect your industry?

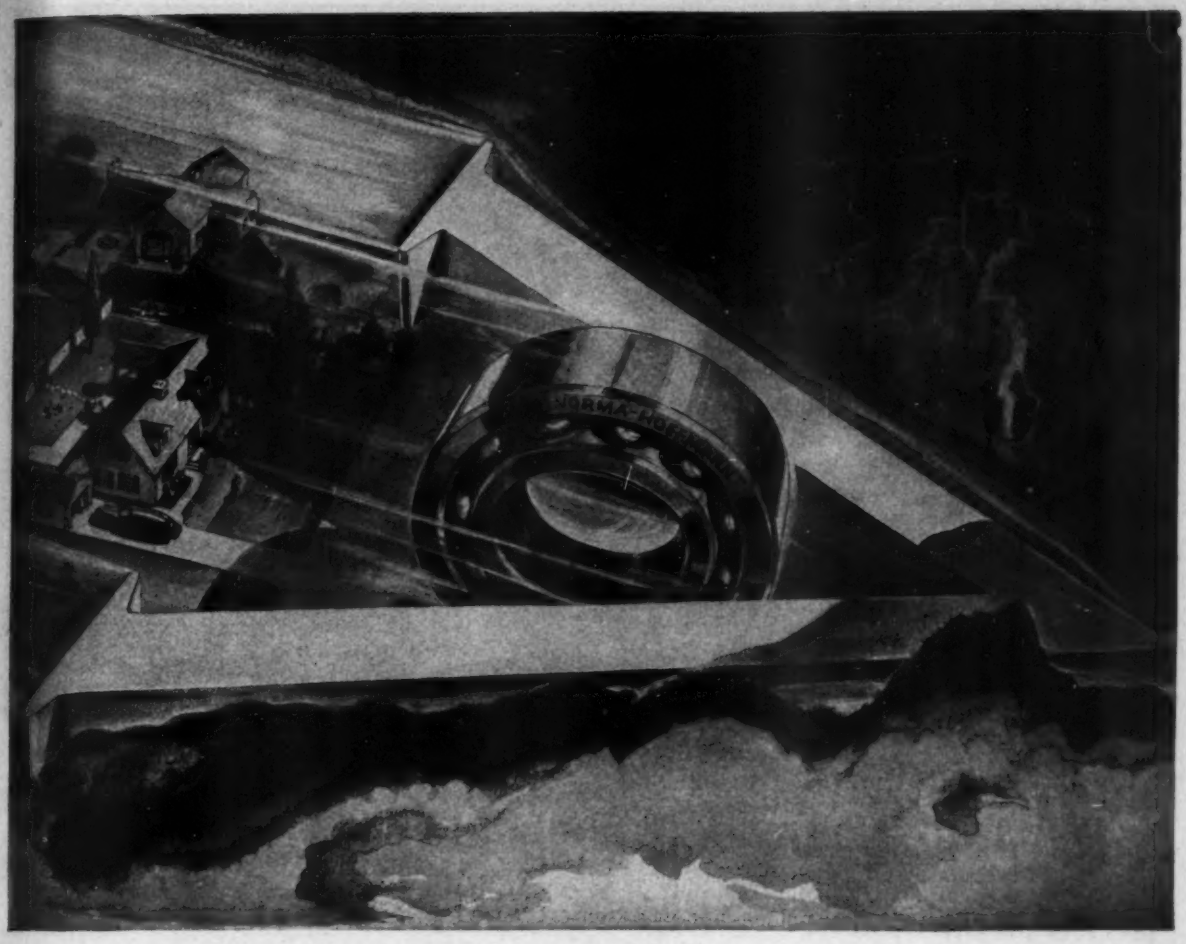
To this question I was surprised to find that 24 said "favorably," with 11 saying "no effect." Only one publisher said that the effect would be harmful or unfavorable.

Q—If, due to the War, your industry has been scattered geographically, what will be the effect of peace?

To that question it is interesting to find 21 publishers believing that their industry will remain scattered. Only one said that there would be a "complete return to former locations;" only another one said that there would be "a partial return." It would seem that this scattering of people abroad the land, this war need for reshifting and redistributing of population would have as its end results a much better social condition; far less territorial jealousies and prejudices; greater appreciation of the problems of varying sections.

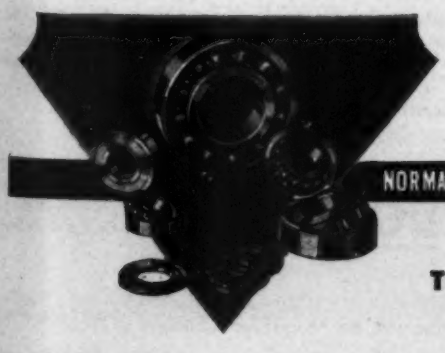
Q—What change in advertising volume do you expect with the advent of peace?

Here again was a little surprise for me, since 31 publishers said "increase"; 10 said "no change," and only nine said "decrease"—six of those qualifying their prediction with the word "some."



TODAY—"on land, at sea and in the air", on fighting fronts and production lines—NORMA-HOFFMANN PRECISION BEARINGS are contributing to the Victory that will clear away the clouds of war.

TOMORROW—bettered by the added skill and experience gained in war-time—they will be equally instrumental in solving the problems of design and production of a world at peace.



Let our engineers work with you, NOW.

NORMA-HOFFMANN BEARINGS CORP'N, STAMFORD, CONN., U. S. A. FOUNDED 1911

PRECISION BALL, ROLLER AND THRUST BEARINGS

TO WIN THE WAR—*Work—Fight—Buy War Bonds!*

Mister—you're getting paid in DYNAMITE!

LET'S NOT KID OURSELVES about this. Our pay envelope today *is* dynamite.

If we handle it *wrong*, it can blow up in our face . . . lengthen the war . . . and maybe wreck *our* chances of having happiness and security *after* the war.

The wrong way to handle it...and why

The wrong way is for us to be good-time Charlies. To wink at prices that look too steep . . . telling ourselves we can afford to splurge.

We *can't* afford to—whether we're business men, farmers, or workers. And here's why:

Splurging will boost prices. First on one thing, then all along the line.

Then, wages will have to go up to meet higher prices. And higher wages will push prices up some more . . . faster and faster, like a runaway snowball.

The reason this can happen is that there is more money in pay envelopes today than there are things to buy with it. This year, we Americans will have *45 billion* dollars more income than there are goods and services to buy at present prices. *45 billion dollars extra money!*

That's the dynamite!

The right way to handle it...and why

Our Government is doing a lot of things to keep the cost of living from snow-balling.

Rationing helps. Price ceilings help. Wage-and-rent stabilization helps. Higher taxes help. They're *controls* on those dangerous excess dollars.

But the real control is in our hands. Yours. Mine.

It won't be fun. It will mean sacrifice and penny-pinching. But it's the only way we can win this war . . . pay for it . . . and keep America a going nation afterwards.

And, after all, the sacrifice of tightening our belts and doing without is a small sacrifice compared with giving your life or your blood in battle!

Here's what You must do

Buy only what you absolutely need. And this means absolutely. If you're tempted, think what a front-line soldier finds he can get along without.

Don't ask higher prices—for your own labor, your own services, or goods you sell. Resist pressure to force YOUR prices up.

Buy rationed goods only by exchanging stamps. Shun the Black Market as you would the plague.

Don't pay a cent above ceiling prices.

Take a grin-and-bear-it attitude on taxes. They must get heavier. But remember, these taxes help pay for Victory.

Pay off your debts. Don't make new ones. Getting yourself in the clear helps keep your Country in the clear.

Start a savings account. Buy and keep up adequate life insurance. This puts your dollars where they'll do you *good*.

Buy more War Bonds. Not just a "percent" that lets you feel patriotic, but enough so it *really* pinches your pocketbook.

If we do these things, we and our Government won't have to fight a post-war battle against collapsing prices and paralyzed business. It's *our* pay envelope. It's up to *us*.

KEEP PRICES DOWN!

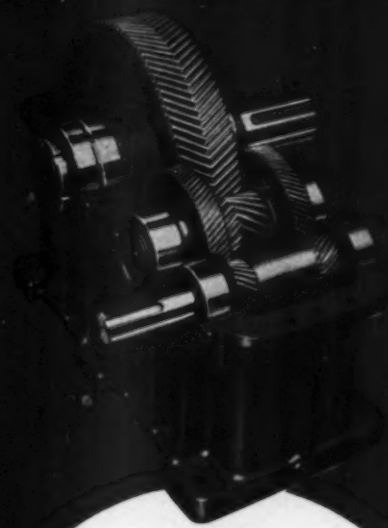
Use it up • Wear it out
Make it do • Or do without

This advertisement, prepared by the War Advertising Council, is contributed by this Magazine in co-operation with the Magazine Publishers of America.

To help you solve THE PRODUCTION PROBLEM

JONES WORM-HELICAL SPEED REDUCERS for vertical shaft drives

● These machines fill a long felt need for double reduction units of the fully enclosed type to be used for agitators, mixers, ore roasters, bending rolls, etc., requiring a vertical shaft drive. Built in standard ratios in various types of assemblies ranging from 40 to 1 to 250 to 1 for all common motor speeds and a wide range of horsepower ratings. Jones Bulletin No 75 covers complete details.



JONES HERRINGBONE SPEED REDUCERS

● Jones Herringbone Speed Reducers are built in single, double and triple reduction types with a large range of ratios and ratings making it possible to fulfill all ordinary requirements by the selection of standard units.

All these reducers have heat treated gears, ground shafts and are mounted with anti-friction bearings throughout.

Catalog No. 70 contains 128 pages of detailed information on the application of these speed reducers.

"JONES DRIVES FOR INDUSTRY"

is the title of a 16-page bulletin that may be helpful in giving you a broad picture of the Jones products, engineering services and manufacturing facilities that are available.

Just ask for Bulletin No. 80

W. A. JONES FOUNDRY & MACHINE CO.
4439 Roosevelt Road, Chicago, Illinois

HERRINGBONE — WORM — SPUR — GEAR SPEED REDUCERS ● PULLEYS
CUT AND MOLDED TOOTH GEARS ● V-BELT SHEAVES ● ANTI-FRICTION
PILLOW BLOCKS ● FRICTION CLUTCHES ● TRANSMISSION APPLIANCES

Both *PERFORMANCE* and *CONSERVATION* with Ryertex Bearings

Performance and conservation are an important combination that mean more efficient operation for paper manufacturers . . . and that is doubly important these days. As for performance . . . RYERTEX has established new records for practically every type of paper mill bearing application. Slow-wearing—almost no-wearing Ryertex Bearings permit finer machinery adjustments, which in terms of production means more and better paper.

Ryertex Bearings and conservation go hand in hand. Virtually every installation is made on the basis of Ryertex paying for itself—and then some. Ryertex is ideally suited for water-lubrication, though any lubricant may be used. These bearings are inert to chemical actions in paper-making. Our engineers are prepared to work with you on any bearing application . . . let your problems have their help.

★ ★ ★

Ryertex applications in the paper industry include: Press Rolls, Calender Stacks, Beater Bearings, Jordans, Grinders, Bleachers, Jack Ladders, Conveyors, Log-Hauls, Drum Barkers, Screens, Bark Pressers, Knotters, Chip Crushers, Deckers, Refiners, Etc.

RYERTEX DIVISION—JOSEPH T. RYERSON & SON, INC., CHICAGO, MILWAUKEE, ST. LOUIS CINCINNATI, DETROIT, CLEVELAND, BUFFALO, BOSTON, PHILADELPHIA, JERSEY CITY

Pulpwood Supply
for Pacific Northwest Mills

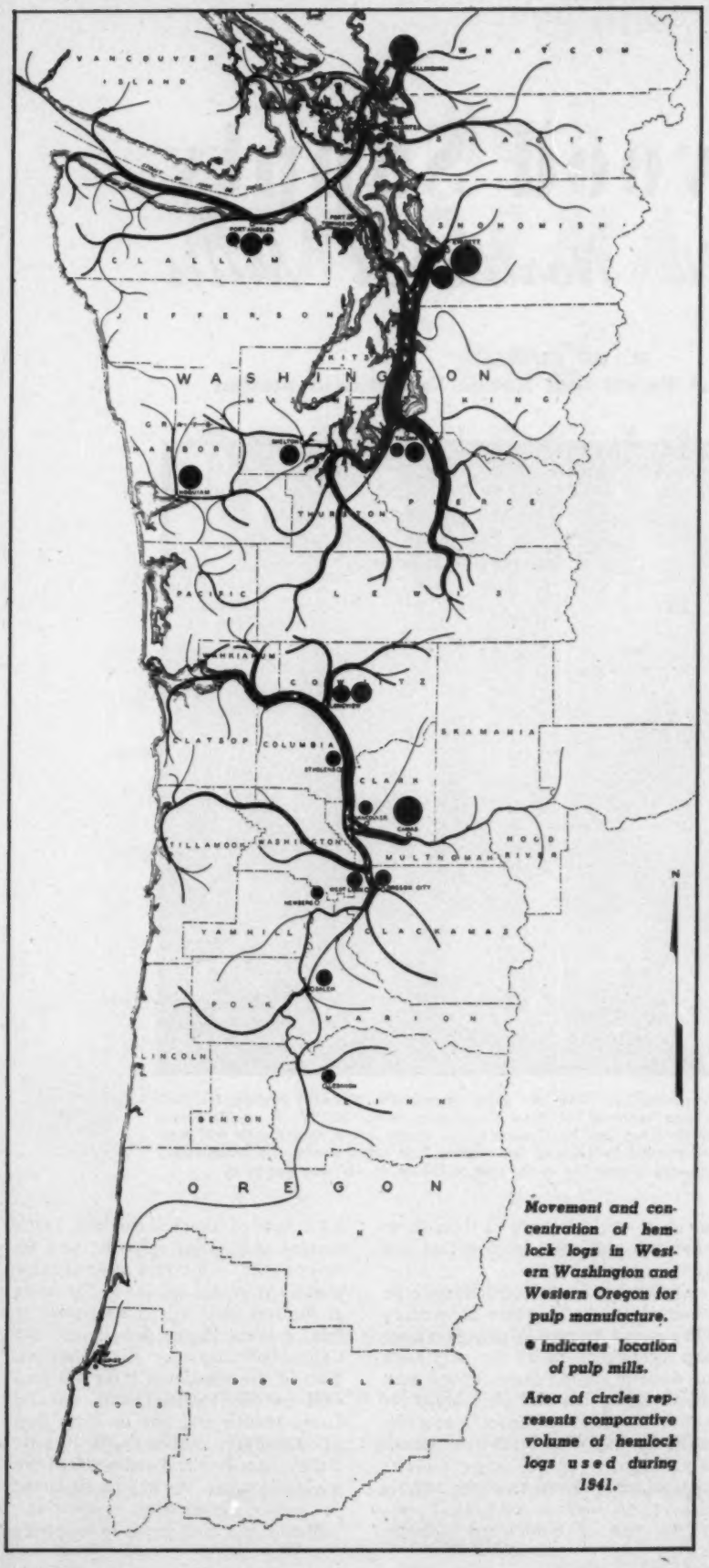
R. W. COWLIN
Pacific Northwest Forest and Range Experiment Station

LEFT—A mature stand of western hemlock. The tree being measured is 40 inches in diameter. Such forests contribute much of the raw material for West Coast pulp mills. RIGHT—A rapid-growing 80-year old mixed spruce-hemlock forest on the Oregon Coast. In the future, such forests will probably form the bulk of pulpwood needed by mills of this region. This stand averages approximately 20,000 cu. ft. per acre and is growing at the rate of 225 cu. ft. per acre per year.

▸▸▸ SUPPLYING THE PACIFIC NORTHWEST pulp mills continuously with raw material is a problem of three parts. First is the extent and character of existing standing timber suitable for pulping and the ability of the basic resource, the forest soil, to produce continuous crops in adequate amounts for future use. The second is concerned with harvesting the forest crop, and the third relates to transporting the raw material from woods to mill. In each of these three processes problems develop that are peculiar to this region.

Discussion in this article will be confined to the situation in western Oregon and western Washington since this region contains all the pulp mills in western United States except one. This region has 26 pulp mills of which 3 were shut down November 1942 by the War Production Board. Total capacity of the active mills is approximately 5,940 tons per 24-hour day; 1,250 tons of mechanical pulp, 1,790 tons of unbleached sulphite, 1,820 tons of bleached sulphite, 1,020 tons of unbleached sulphate, and 60 tons of soda. All except three of these plants are located on one or the other of the two great inland waterways of this region—Puget Sound or the Columbia-Willamette River system. Two of the remaining three are situated on the Pacific Ocean, one on Grays Harbor and one on Coos Bay. The other is located in the Willamette Valley, near Portland and not far from navigable water. As will be explained in greater detail later, water transportation is a vital factor in supplying

Illustrations used with this article are reproduced from U. S. Forest Service photos.



Movement and concentration of hemlock logs in Western Washington and Western Oregon for pulp manufacture.

• indicates location of pulp mills.

Area of circles represents comparative volume of hemlock logs used during 1941.

Pacific Northwest pulp mills with raw material.

During 1942, pulpwood consumption in this region was almost 2½ million cords and wood pulp production nearly two million tons. This production has been exceeded in only one year, 1941, and then only slightly.

Pulpwood resources of western Washington and western Oregon total more than 34 billion cubic feet of standing timber of which 21 billion feet is western hemlock, 9½ billion feet balsam fir, 2 billion feet Sitka spruce, and 1½ billion feet of miscellaneous pulping species. Calculations leading to estimates of the adequacy of the resource to maintain current production levels continuously must consider, in addition to the size of the inventory, rate of depletion of these species from all causes and rate of replenishment by growth. These species, particularly Sitka spruce and western hemlock, are cut for other purposes than pulpwood and hence all of the inventory may not be available for pulp manufacture.

Estimates of the rate of depletion from all causes can be made that are probably sufficiently accurate for the purpose of judging prospects for future timber supplies even though precise figures are not now available. At the 1941-42 level of cutting, current annual depletion is estimated at roughly 600 million cubic feet. On the other hand, current annual growth is estimated at about 300 million cubic feet. This apparently indicates a net annual reduction in the inventory of 300 million cubic feet and leads to the conclusion that the future supply is assured for at least a century. The answer is not that simple, however, and other factors must be weighed. Growth and depletion are not only dynamic in name but in fact. Changes are constantly occurring that alter the growth-depletion ratio.

Cutting of pulp species may be expected to increase even if the pulp industry fails to expand. When old-growth Douglas fir gets scarcer hemlock and the balsam firs may be in greater demand for lumber manufacture. A considerable portion of current depletion consists of losses from fire, insects, and wood waste. Improved methods of forest management may rescue much of this loss for commercial purposes. Also, under improved management practices growth can be increased about three-fold. On the other hand, premature cutting of existing second growth will endanger the permanency of the resource. If the entire region can be placed under forest management, Douglas fir second growth will eventually be available in

Logs being dumped into Young's Bay where they will be sorted and rafted for towing to sawmill and pulp mill. The truck on the left is being loaded with trailer for return trip to the woods.

quantities sufficient to supply a lumber industry of approximately the present magnitude. Douglas fir woods and mill waste is another potential source of raw material for pulp mills. At present, Douglas fir is being pulped by the sulphate and soda processes. However, this species now forms only a small part of the raw material used by pulp mills of this region. Research, past, present, and future, should result in development of feasible processes for producing bleached pulp from Douglas fir waste. Considering all these factors it may be safely asserted that the future of the Pacific Northwest pulp industry can be assured at least as far as raw material supply is concerned if satisfactory forest management is practiced. In fact, at the present time, Pacific Coast pulp producers are leaders in industrial forest management in this region. The growth potentialities of the spruce-hemlock forests of this region furnish convincing support of this assertion. On the better sites, yields of 200 cubic feet per acre per year can be realized.

Harvesting of pulpwood is complicated in this region by the fact that some timber is cut in the form of cordwood and some is cut in the form of sawlogs. In 1936, a survey of pulpwood manufacturers of the region indicated that in a normal year pulpwood consumed would be divided as follows: logs, 69 per cent; forest pulpwood (cordwood), 20 per cent; and mills waste, 11 per cent. These percentages vary from year to year, but, generally speaking, there has been a tendency in recent years for the per cent of logs used to increase. During depression years the cutting of cordwood increased, but at current wage levels this practice has declined.

The heavy reliance of the pulp mills on logs for raw material links them with the logging branches of the lumber industry. The key to this situation is the association in the forests of this region of western hemlock with Douglas fir, the principal lumber species. Logging methods used in pulpwood harvesting consequently have been dictated by sawlog operations. The open log markets, which flourished in this region until the war, gave the pulp mills a common source of supply. Many independent loggers fed logs into this market. Since the operations were directed primarily to producing the higher valued species, Douglas fir, cedar, and spruce, for sawmills and plywood plants, the production of hemlock logs was of the nature of a side line. At least it has been said frequently that logging operators expected to realize their profits from the sawlogs and peelers and if the hemlock pulp logs returned the bare costs of operation they would be placed on the market.

Likewise many manufacturer-loggers had surplus hemlock logs not suitable for lumber. Even the large pulp producers operating their own logging operations sold Douglas fir saw logs and other high quality logs in the market to sawmills and plywood plants. These practices had combined to produce a peculiar condition which until the intervention of the war was in the process of change. That condition was subordination of pulpwood to saw logs in the logging operations. Very probably this benefited the pulp producers and gave them a comparatively cheap source of raw material. A few years prior to the outbreak of War, the beginning of a transition could be observed. The stands immediately surrounding Puget Sound and Columbia River were being reduced and logging operations were moving into higher country which had

Loading a truck with spreader bar system. This logging operation is in mixed Douglas fir, spruce, and hemlock on the Oregon coast.

Loaded log truck on a 5 per cent adverse grade.

a smaller percentage of Douglas fir and cedar as well as a greater percentage of the lesser valued species, hemlock and balsam firs. At the same time logging costs were comparatively higher since the ground was steeper, stands were sparser, and overland transportation distances were greater.

The advent of war interposed a new set of values, highly artificial, which have probably accelerated this more natural trend. High prices of manufactured products have brought high stumpage and log prices. Premium prices paid for high quality material have opened operations which otherwise would have proved uneconomical to supply high quality noble fir and hemlock logs for production of aero lumber.

The scramble for logs and stumpage has resulted in the virtual drying up of the open log markets. Some pulp producers, formerly not greatly concerned with log production, have interested themselves in the problem of insuring a raw material supply.

Many loggers and sawmills are leaving the Sound and Columbia River and moving south into Oregon where the stands have little hemlock. On the other hand the pulp mills probably will stay in the present locations but some reorganization in the method of supplying raw material will undoubtedly take place. Two plants are owned by a large lumber manufacturer that has adequate timber supplies and production of pulp logs can be integrated with production of sawlogs. Others have some affiliations with lumber manufacturers.

With the development of logging operations producing primarily for pulp mills, changes in logging methods and equipment may be expected. For the present, however, there are no significant differences between methods used in producing logs for lumber manufacture or for pulp manufacture.

As pointed out before, the key to log transportation in this region is the two inland waterways—Puget Sound and the Columbia-Willamette River system. The accompanying map which shows the flow of pulp logs during 1941 graphically illustrates this condition. Both railroad and trucks are used to haul logs to mill or towable water. In the past few years, the use of trucks for log transportation has increased greatly and it is estimated that at present 75 per cent or more of all logs is hauled all or part way to the mill by motor truck. In some instances, trucks are used for feeders to railroad but more commonly trucks haul the entire distance to mill or waterway.

Practically all of the cordwood used by pulp mills is trucked to the mill, usually by small producers using small 4- or 6-wheel trucks and operating on the public highways.

The bulk of the pulpwood is hauled in log form and trucks of various sizes are used ranging from small 4- and 6-wheel trucks to large 14- and 18-wheel truck-and-trailer units some of which have gross vehicle weights up to 140,000 pounds and haul loads from 10 to 15 thousand feet. Some of these trucks operate entirely on private roads, others on both private and public roads, and others on public highways entirely. The large operators build well-constructed roads suitable for all weather hauling and the mileage of "bare foot" roads is not great. It is estimated that the average one-way hauling distance is from 15 to 20 miles, and the average load from 4 to 5 thousand board feet, log scale. The difficulty of obtaining tires, trucks, and repair parts has added greatly to pulp log producers' problems. However, these problems are shared by the entire logging industry and other industries dependent upon motor transportation. It is reasonably sure, however, the motor trucks will continue to be the principal means of log hauling. In the anticipated transition to a logging industry producing primarily pulpwood and the expanded cutting of second-growth, the flexibility of motor transport insures its increased use.

Piles of pulpwood that have been cut and trucked to railhead by farmers and small operators. With high labor costs, this type of operation is now less common than it was a few years ago.

You Can't Win - - - Gambling on Accidents

U. S. DEPARTMENT OF LABOR
Division of Labor Standards

▸▸▸ PACKED CARTONS tumble about in a large revolving drum. They are being tested for their ability to take rough treatment before they go into action, protecting shipments safely to their destination.

Cartons like these will carry supplies for distant fighting forces. Tossed in the surf as the landing party leaps ashore, these cartons must hold their cargo under all conditions and any kind of weather. The carton that splits open or collapses means the loss of precious food, clothing, and munitions on which lives depend. *You don't gamble on such an accident; you prevent it.*

And yet many thousands of employers and their workers in this essential industry do gamble on accidents every day—accidents that waste manpower and delay delivery of war materials before they even leave the factory.

Here is a plant that manufactures box board of which corrugated boxes are made. A helper stands beside a corrugating machine feeding the top liner under the pressure belt. Suddenly his hand is caught between the belt and the heated table and his arm is drawn in above the elbow, severe burns resulting. A month after the accident, infection develops and he dies.

If the danger point on this machine had been guarded, this accident might never have happened. If the plant had provided adequate medical service the infection and loss of life could have been prevented.

Because of such "if's" 2½ million workers were injured or killed on their jobs in 1942. In that first year of war, with manpower becoming increasingly important, job injuries robbed this country of the services of 20,600 workers who lost their lives; they permanently impaired the skills and abilities of 112,800 others who lost a hand, an arm, a leg, a foot, or an eye. Besides this loss of manpower, industrial accidents interrupt the orderly flow of production; often they result in serious damage to machinery, equipment, or work in process.

The military commander who throws vast resources into battle may make strategic gains to compensate for losses of men and equipment. But the employer has nothing to gain and a great deal to lose in gambling on accidents.

The paper industry is not one of spectacular hazards. A large number of its accidents are simply a result of poor plant housekeeping, wet conditions from roof and valve leaks, freshly washed floors, and particularly from wet processes such as operations at the wet end of paper machines, failure to remove broke and pulp promptly from floors, uncoiled hose waiting to trip the employee who steps from a ladder or platform.

Also numerous are accidents in handling rolls, bales, and bundles of paper and pulp. Workers fail to take a firm grip, to lift with the legs instead of the back, to obtain sufficient help, or to use hoisting equipment in handling heavy loads. Often management does not provide sufficient training in handling these loads, is not sufficiently careful in assigning workers to lifting jobs, fails to provide the mechanical equipment needed. Hernia, resulting from such lifting, generally lays a worker up for eight weeks. Sprains and strains, particularly of the back, often do not clear up with the end of the original disability, but linger on—a source of recurring ailment. The influx into paper mills of untrained workers, many of them women, men, and youths unused to heavy work, has led to an increase in danger of this type of injury.

This information would hardly disturb the new worker—he's known how to lift all his life, and as for plant housekeeping—that's sissy stuff, he thinks. His very ignorance of the hazards involved increases his danger. Throughout the industry the increased employment of new workers, shortage of supervisory employees, the addition of new equipment, and the increased pressure of production has brought higher accident rates.

But in spite of these wartime production difficulties, these accidents do not have to happen. That has been proved by the eight paper mills reporting a no-accident record of the entire month of April in the annual paper industry safety contest. And it has been proved by many other war plants that have markedly reduced accidents in the face of rising employment and expanding operations—with the assistance of the National Committee for the Conservation of Manpower in War Industries.

This Committee includes 22 representatives of management, labor, and Government, and operates through the Division of Labor Standards of the United States Department of Labor. It has enlisted the voluntary services of nearly 600 highly trained safety engineers from some of the largest

There is a short circuit hazard in open fuse box with loose cards and plugs.

A fire hazard—oily rags left lying around

war plants in the country. These plants, recognizing the value of this program, have allowed their safety engineers to spend some 20 per cent of their regular working time as special agents of the National Committee. The Committee now has proved its effectiveness for more than three years, since it was appointed in 1940 by Secretary of Labor Perkins, who foresaw that the pressures of war production would demand a pooling of the best resources in the field of safety and health.

Accident prevention must be done in the plant, and so these special agents call in person on top management and offer their services in analyzing the safety and health problems of the establishment and in setting up an adequate safety program.

For example, a firm in Brooklyn employing 800 workers had an accident frequency rate of 42 when the special agent first called. Through consultation in the plant, he assisted in the organization of a definite safety program, advised on providing proper safety clothing and improving first-aid facilities. The firm in the meanwhile was expanding rapidly—by the end of 1942 its employment had increased to 3,600 or 250 per cent. In spite of this rapid growth, the firm through the services of the special agent brought its accident frequency rate down to 30.8, saving 1,620 man-days during the period of the agent's visits.

No firm can push down its accident rate until management assumes its full responsibility for providing a safe and healthful workplace. But once this responsibility has been assumed, the National Committee and its special agents can give expert assistance in setting up a safety program that will do the job.

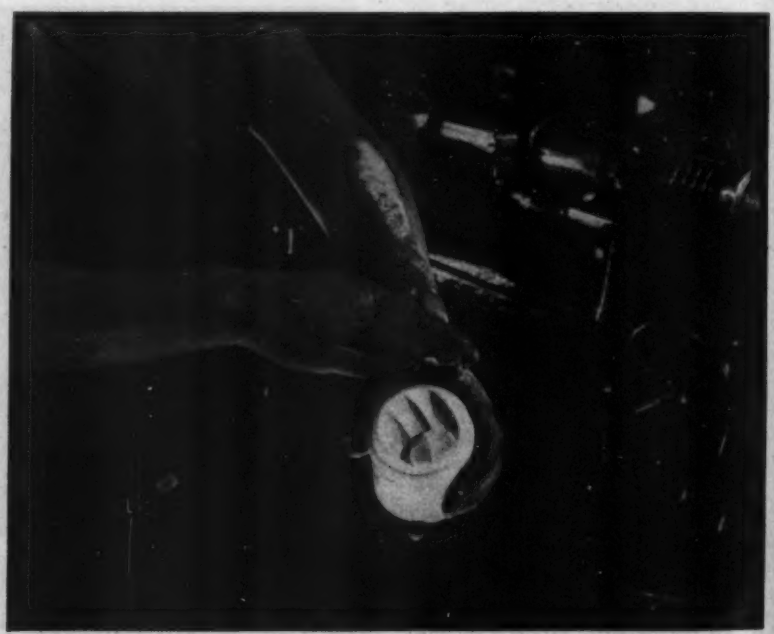
A second and equally important factor in achieving a good safety record is securing the hearty, continuing, and constructive aid of the foremen in accident prevention. The foreman is the leader in his department. He is in charge on the spot, and in closest contact with the workers. He can see that his workers learn the safe way—the most effective way—to do a job, have a safe place to work, and work safely. He can call attention to needed safety measures, because he knows the safety problems in his department better than the manager in the front office.

Recognizing the key position of the foreman in the safety picture, the National Committee has secured the services of the U. S. Office of Education in setting up for them short, intensive courses in accident prevention directed by engineering colleges throughout the country and held in industrial centers. Through the Division of Labor Standards, top-ranking experts in the field of safety engineering have prepared text material. Practical men from industry—the Committee's special agents—act as teachers. Today nearly 40,000 supervisors in industry have learned through these courses to speed production by making safety an integral part of the job.

The National Committee is following up this training with 20-hour foremen's courses in the plant, taught by supervisors who have graduated from the basic safety course. The Department of Labor is preparing jointly with the National Safety Council a series of 10 new sound slide films on foremen safety for use in this training. It is expected that by July 1944 some 625,000 foremen will have participated and together will be able to give on-the-job safety instructions to some 12½ million workers.

The formal courses and the plant

(Concluded on page 722)



Protective cream prevents irritation of skin from cutting oils and chemicals.

The Future of the Industry in the Pacific Northwest

FRED D. MOSHER

An example of the timber reserves in the State of Washington from which the paper industry of the Pacific Northwest draws its raw material. (Photo courtesy American Forest Products Industries)

▶▶▶ WHEN MILL WHISTLES announced the end of World War I on November 11, 1918, the pulp and paper industry in the Pacific Northwest was just beginning to hit its stride. From an infant industry it had taken its place as a major factor in the growth and development of the region which encompasses one of the richest areas in North America. But with the cessation of hostilities, the Pacific Coast soon lost its boom status; war industries folded up as war contracts were cancelled; shipyards became uninhabited structures; the unemployed soon outnumbered the employed and, gradually, the entire region started a downward trend which culminated, with the rest of the country, in the widespread depression of the Thirties.

A study of the pulp and paper industry during the Twenties shows that reasonable stability was reached during the period, but external factors and lack of postwar planning had a retarding effect on natural expansion. Like many other industries, the pulp and paper mills had failed to foresee postwar conditions and, as a result, when the end of the war came, very little planning for the future had been done. Dislocation occurred in the early Twenties, but this was of a temporary nature.

▶▶▶ The outbreak of World War II found the paper manufacturers of the Pacific Northwest region in a sound position. Many large mills were operating under capacity and increased demands were easily handled. Forest conservation programs fostered by the Federal and various state governments were widely supported by the industry. Prior to Pearl Harbor, production of pulp, paper, and paper products was accelerated by demands of the Allied countries, and the reduction in imports from the Scandinavian countries added further stimulus to output. However, emphasis was switched from strictly pulp and paper production to that of a by-product nature. Special pulps were demanded, and the facilities of mills were required for other work—in 1942, for example, 22 leading Pacific Northwest mills were using machine shop facilities to produce parts for airplanes, ships, and other war industries.

The acceleration of the war effort also has had adverse effects on the pulp and paper industry in the Pacific Northwest. The speeding up of the war program following the entry of the United States into the conflict affected the industry adversely for the following reasons:

High priority on labor was granted to the shipbuilding industry accompanied by high wage levels, and this brought about an immediate drainage of manpower from logging operations and the forces of mill labor. In spite of the greatly increased demands for special pulps and paper products for war use, Pacific Coast mills produced less in 1942 than in 1941, and 1943

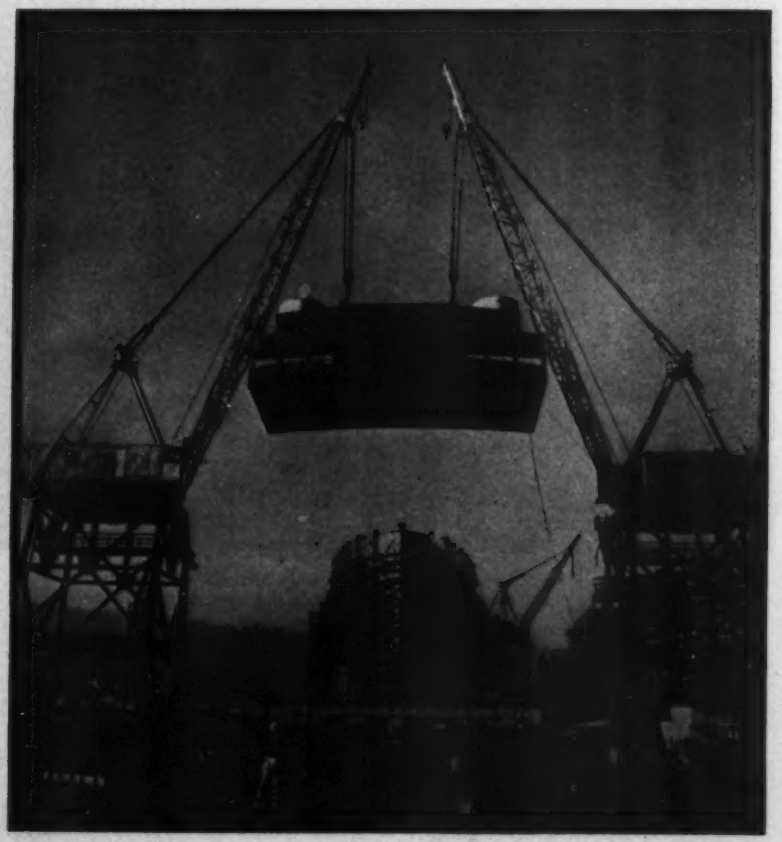
is expected to show a further decline. Scarcity of materials and heavy equipment made it necessary to curtail expansion programs already under way. The result of this has been that more efficient methods of production, including utilization of waste, have not been brought about in many instances. Price fixing and allocation orders also have introduced restrictions. Embargoes on Canadian logs have had very serious effects, and a number of Puget Sound mills have shut down with the possibility that they will remain so for the duration.

▶▶▶ The past difficulties of the paper industry in the Pacific Northwest and the adverse effects of war will be countered with a future that holds great promise. Any analysis of postwar conditions and the long-range future of the pulp and paper industry must be viewed in the light of total industrialization in the Pacific Northwest region.

What will make the postwar period of World War II different from that of World War I?

Will the long-range future be any different than, say, the 1920-1940 period? Events now taking place in the area bordering the Pacific Ocean in our Northwest will eventually supply the answers to these questions, and at the moment it is possible to talk optomistically about the future.

Of major importance to the pulp and paper industry is the amount of postwar planning now being done in the Pacific states. Chief planners are agencies of the various states, Federal agencies such as the Bonneville administration, and private groups sponsored by private interests. Nowhere in the United States has such energy been applied to future planning as in this region. Other groups are likely to be formed as time goes on. On September 1 it was announced at Portland, Oregon, that the city had raised a fund of $100,000 dollars to be spent immediately on postwar planning. A group of engineers headed by Robert Moses, parks commissioner of New York, was engaged to make a thorough survey and report. A joint committee of the United States and Canada is functioning in the North Pacific area to study the economic future of the one million square miles embracing the Pacific Northwest, British Columbia, the Yukon, and Alaska.



Ships built from prefabricated sections in the Kaiser yards of Portland, Oregon. The machine shops of paper mills supply parts. (Kaiser Photo)

These postwar planning groups are setting out immediately to prevent the conditions which followed the first World War from occurring again. The long-range plans include the converting of temporary industries into permanent ones; the development of the latent natural resources of the area; the establishment of new industries and public works programs; and a general integration of the industrial region. The future of the pulp and paper industry forms an important interest in all these plans.

In addition to the organized planning now being carried on in the Pacific Northwest, there are many other factors that will materially influence the future of paper manufacturing and make it much different from that which followed the last war.

Hydroelectric Developments — Although plans for developing the hydroelectric potentials of the Columbia River were on paper in sketchy form at the end of the last war, very little was done until the depression of the Thirties. Now these plans are being consolidated and extended, and what is more important, they are being carried out. The giant Grand Coulee and Bonneville projects are being pushed to completion so that the postwar period will find an abundance of cheap power available for industry, and will benefit the paper and pulp industry in particular because of the large amounts of electric power used in manufacturing processes.

The Airplane Industry—The manufacture of air transport equipment was firmly established in the Pacific Northwest prior to the outbreak of the present war and its expansion has gone forward under the stimulus of increased demands for combatant units. In addition to the established industry in this field new plants are planned for the postwar period. During the emergency, papermakers have found many uses for their products in the plane manufacturing industry and any expansion will accrue to the benefit of the mills.

Light Metals—This is a completely new manufacturing industry to the Pacific Northwest, and it was made possible by the large amounts of electric power available, so necessary to the carrying on of such enterprises. During the war the products of the light metals mills are going directly into manufacture of equipment vital to the prosecution of the war. But research has shown that many by-products of the paper mills, and new products from the mills, are highly desirable in the manufacture of peacetime necessities along with component

parts of light metal. In this field alone, the pulp and paper industry has an excellent future.

The Plastics Industry—This industry is still in its infancy and is steadily increasing its demands for products and by-products of the paper mills. The Pacific Northwest is looking to a future in which plastics will play an important part in its economy. Boeing Aircraft Company has announced its intention of entering the plastics field when the war is over, and it is expected that many of the munitions plants in the region will be converted to plastic manufacturing; these plants which now use large quantities of nitrated pulp would continue to do so as peacetime plastics manufacturing units.

The paper and pulp area of the Pacific Coast is also looking beyond its own shores. In 1940, alone, Japan imported 400,000 tons of newsprint in addition to large amounts of other paper. In the same year, Latin America imported 350,000 tons, and Australia 175,000 tons. Figures for China are not available, but its postwar potential is considered great. Exports of paper and paper products to markets bordering the Pacific are expected to be heavy in the years immediately following the War, but after leveling off due to foreign competition, the market later is expected to expand under pressure of industrialization in those countries served.

Nearby export business should result from any industrialization of Alaska; the export business would consist of finished products. Alaska itself has great timber resources, but with planning getting more and more attention, it is more than likely that it will provide a market for finished paper products for many years rather than provide competition.

Within the industry itself, many steps have been taken which will put the Pacific Northwest producing area on a sounder basis. Chemical research by government and private agencies is finding new uses for waste material; increasing amounts of pulp for paper manufacture are being produced from wood waste. The manpower shortage has stimulated research into production methods which depend more on machines. Chemical processes in manufacture are being advanced. Perhaps the most outstanding advances have been made in the field of timber conservation. Both private and government organizations have contributed greatly to the efficient use of existing timber reserves—perpetual reforestation is assuring for the future an ample supply of wood for all purposes. There is not, however, complete agreement as to how much the industry can expand in the Pacific Northwest and still have an ample supply of wood. Should research continue to find new ways of utilizing waste material, the industry could afford further expansion without draining timber resources.

Pulp and paper products of the Pacific Northwest go into Boeing Flying Fortresses. (Boeing Photo)

Alaska is getting considerable attention by the various planning agencies now functioning on the Pacific Coast. This has been the subject of a number of meetings between government officials of both Canada and the United States. Estimates show that Alaska can support a paper industry of more than 1,000,000 tons of newsprint a year. Paper men differ in their opinions as to how these resources should be utilized; but the majority favors using the wood for producing paper in mills already established in the coast region until such time as the development of Alaska warrants the actual erection of mills in that section. Once facilities were developed in Alaska for getting wood to the coast and shipping by water, wood could be moved cheaply to mills operating on the coast.

The pulp and paper industry in the Pacific Northwest is concentrated in the region bordering the coast and Puget Sound. Included in the Pacific Northwest Area are the states of Oregon, Washington, Idaho, and Montana. There is no paper manufacturing carried on in the two latter states. This means that paper and paper products must be shipped into these states by rail, involving heavy transportation costs. The future may see mills established in these states—publishers' associations and other organizations have recommended mills for the future. In Montana, a company has been formed to build mills and produce paper when the War ends.

Within the industry, an amount of spade work remains to be done in connection with the long-range future. Recently the Bureau of Foreign and Domestic Commerce had something to say on this subject with specific reference to future outlooks. The Bureau projects the national economy into 1946, and shows how the paper industry and its allied products will be affected. It assumes an 18 per cent increase in pulp production and a 36 per cent increase in paper production in paper manufacture, taking the production of 1941 as the base year. The Pacific Northwest area is in an excellent position to participate in these gains. But in the interim, preparatory steps must be taken.

The Pacific Northwest has been particularly hard hit by the manpower shortage with the paper and pulp industry suffering most acutely. The future of the industry might well be influenced by the extent to which the employment situation is stabilized after the War. Wages may remain at higher levels than existed in prewar days. Should higher wages result in higher costs for raw materials, the industry may have to push its distribution of byproducts to offset increased costs.

When the war ends, many questions will have to be answered quickly. The pulp and paper industry would do well to work with planning agencies in mapping postwar strategy; the prosperity of the industry must of necessity follow general prosperity in the country. It should be known in advance, for example, what wages should prevail in different sections if the labor supply is to remain stable.

Immediately following the war, and later as Asiatic countries become industrialized along with some of the Latin American republics, the paper industry in the Pacific Northwest may

(Concluded on page 723)

You Can't Win . . .

(Continued from page 718)

visits have been supplemented by printed pamphlets giving basic safety information and promoting safe practices. The Division of Labor Standard's Special Bulletin No. 3 outlines material fundamental in organizing a plant safety program. *Suggested Standards for Industrial Safeguards,* Special Bulletin No. 7, gives illustrations and specifications for machine guards. Pamphlets in more popular style deal with safe practices for workers and safety in supervision.

A Guide to the Prevention of Weight-Lifting Injuries, just published as Special Bulletin No. 11, is of particular interest to the paper industry. It outlines basic principles for good planning by management in the use of mechanical lifting and conveying devices and in controlling the amount, pace, and duration of manual lifting and carrying; the proper selection of workers for heavy jobs; the careful training and constant supervision of workers in safe lifting and carrying practices. Compiled under the guidance of a technical advisory committee including experts from industry, it is illustrated with photographs of mechanical lifting devices and safe methods of manual lifting.

A popular leaflet explains the value and uses of industrial frequency rates. It is especially timely since employers, as of May 1, 1943, are required to keep a record of frequency rates if they operate under the Walsh-Healy Act, applying to Government contractors. The frequency rate is as necessary to the safety-minded management as a gage on a steam boiler. The experience of many firms over a period of years has demonstrated that a rate of less than 10—10 lost-time injuries in a million man-hours of work—is perfectly possible even in dangerous occupations. By computing its own frequency, plant management can check its work against this accepted "tolerance," thus gaging the effectiveness of its accident prevention program.

The program of the National Committee has been compared to the Red Cross blood bank. Blood donors are voluntarily giving the precious plasma needed to save the lives of soldiers on our fighting fronts. The special agents of the National Committee are voluntarily giving their time and their expert assistance needed to save the lives and limbs of workers on our production front. The existence of the program has hinged in large part on the willingness of individuals to volunteer their services for a national cause. The work they have done has proved that safety speeds production.

For example, a New England firm found that by saving the time lost through accidents it could produce every month one and a quarter more of the very important machines it was manufacturing for the War Department. Upon the recommendations of one of the Committee's special agents this firm employed a full-time safety man, organized an over-all plant safety program, sent supervisors to the local safety engineering training classes, distributed safety publications among its workers and drew them into the safety effort, and asked the Committee to keep in frequent touch with the plant and continue its recommendations. Within 2 months of this reorganization, in which the Committee gave constant assistance, this company had cut its accident frequency rate 50 per cent and was pushing the rate still lower.

In this way the special agents since 1940 have serviced over 20,000 plants. A survey of more than 1,000 of these plants showed that two-thirds of them had succeeded in markedly reducing their accident rates with the Committee's assistance. Rough estimate places the time saved in plants visited in 1942 alone, as a result of the Committee's accident prevention service, at 1,173,000 man-days.

Time saved on the industrial front also means time saved on the battle front. A safety program that keeps on the job men and women who would otherwise be injured, maimed, and killed by industrial accidents means manpower to speed the day of peace and end the overwhelming loss of lives that is a part of war.

Slidefilm Fundamentals

LYNE S. METCALFE

▶▶▶ WHILE MOTION PICTURE and slidefilm projection equipment has been greatly simplified, to a degree that makes its use almost "fool-proof," widespread and ever-increasing use of motion pictures and slidefilms in the war production training program has brought the need for some expert guidance in making visualized meetings and classes more efficient through the enlistment of proper techniques.

There are many little things which may be done to insure a smooth-running session without embarrassing interruptions or digressions, and other things that can be avoided to the same end.

These "pointers" have been pictured and explained in simple fashion in a new reading or discussional type slidefilm titled, "Tips on Slidefilms," now available to anyone interested. This slidefilm consists of 80 frames or pictures—photographs, diagrams, drawings and charts with letterings, text, labels and notations on the film itself which may be read from the screen.

The material used for producing this picture is the result of experience in holding many thousands of visualized meetings in American industry. It is divided into main sequences as follows:

1) Preparing the meeting or classroom.

2) The projector and its use.

3) The projector in the meeting itself.

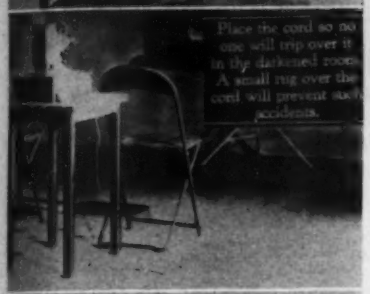
4) Individual use of the slidefilm by individuals as a "refresher" aid.

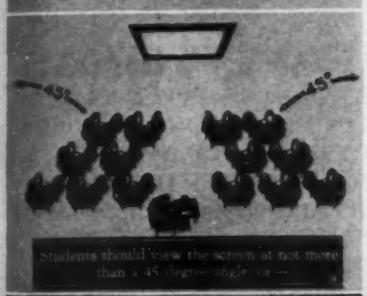
5) Use of the slidefilms as a plant or mill picturized reference library.

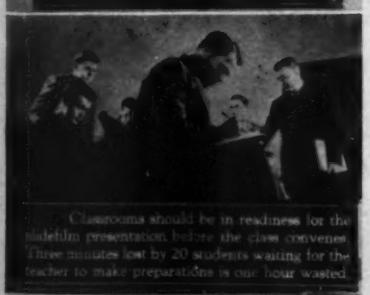
In addition to pointing out some of the little precautions that, if taken, produce better results, the subject also provides suggestions as to the most effective conduct of a visualized class, especially with regard to getting the widest benefits of information contained in this slidefilm:

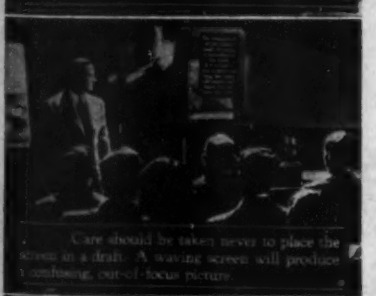
1) The meeting room should be ready before the employee group gathers. →

AUTHOR'S NOTE: From time to time, this magazine has published special articles on motion pictures and slidefilms on training-within-industry topics. Inasmuch as a knowledge of the simple techniques of utilizing these media has much to do with their effectiveness and convenience, it is believed that the new slidefilm described here, and available to the industry, will greatly help in improving the quality of visualized training.






Classrooms should be in readiness for the slidefilm presentation before the class convenes. Three minutes lost by 20 students waiting for the teacher to make preparations is one hour wasted.



2) The room should be reasonably dark, but no darkening is needed for small groups of 10 or 15 people.

3) The screen should be in the darkest place in the room.

4) The screen should be high enough to give all an unobstructed view of the picture.

5) Never place the screen in a draft—a waving screen makes an out-of-focus image.

6) Place the projector just far enough from the screen so that the image will fill it.

7) Have the projector high enough so the heads of the audience will not obstruct the projected image.

8) A small rug thrown over the projector cord will prevent people tripping over it.

9) Tie the projector cord to the table leg so that the projector will not fall over if someone *should*.

Another sequence shows how the projector should be set up, also how chalk tracings may be made on a blackboard using screen images as patterns for permanent study.

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The Future of the Industry in the Pacific Northwest

(Continued from page 721)

find itself in a most advantageous position for export trade. Among many other things, we should expect cheap postwar ocean transportation which will favor this trade. "Dumping" products in foreign countries always has resulted in bad trade relations and punitive tariffs to restrict such practices. In the extreme, foreign competitors may enter into agreements which exclude the dumping countries from markets. It is assumed that China is potentially an expanding market for the products of Pacific Northwest mills. To plot its future course in such matters the industry will do well to work with government agencies in formulating its plans. It may have to be decided, for example, that certain products should be made, for a number of reasons, in countries other than the United States. The preservation of world trade relations easily may dictate such a course.

Recently, speaking for his company, J. P. Weyerhaeuser, executive vice president of the Weyerhaeuser Timber Company, large manufacturers of pulp in the Pacific Northwest, stated that "The policy of the Weyerhaeuser Timber Company is to operate its properties in such a way as to provide a permanent and profitable investment for capital; to bring about continuous, profitable and enjoyable employment for men; and to furnish society with uninterrupted supplies of forest products." Many leaders in the paper industry on the Pacific Coast adhere to this general industrial philosophy. Such beliefs lead to better and cheaper commodities for general distribution. After the war the paper industry may well be concerned with the progress of the nation as an industrial policy.

Unless our economists have been leading us astray, we shall see the greatest boom in home building that the country has ever known. In the prefabricated home industry the Pacific Northwest has a great stake. Wood (and more recently paper products and conversion products) is playing an increasingly stellar role in the production of homes, and in the future will be an expanding market for composition materials made from wood waste. Another important domestic market may result from high grade containers for food packaging.

Both housing and the container market will bring the paper industry closer to the requirements of mass consumers. In this field it has been found necessary to adopt business policies which meet with the approval of the general public. Much of this consumer business eventually will be established at the back door of the paper industry in the Pacific Northwest. Immediate plans of the Bureau of Reclamation in the State of Washington alone call for the settling of 500,000 people in a region practically uninhabited at the present time. Other projects provide for increased agricultural and industrial activity for the future. In all these plans and projects the paper industry of the Pacific Northwest has an interest.

Manufacturers of paper and paper products will play a prominent part in the new industrial empire that is taking shape—an empire which holds much promise for the future.

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INDUSTRIAL RELATIONS PROGRAM DEFINED*

Briefly summarized, a good industrial relations program should include these principles: Hold the initiative! Do the thing we know should be done before it is demanded of us, and do it in a spirit of ungrudging cordiality. Develop cooperative good will. Avoid aloofness. Catch and correct undercurrents of discontent while they are still rivulets and before they reach flood stage and get beyond control. Systematize industrial relations, but don't allow them to become mechanical or impersonal. Keep 'em human!

(*) From an address by Reuben B. Robertson, Champion Paper and Fibre Company presented at National Association of Manufacturers Wartime Institute on Industrial Relations.

PAPER SKETCHES

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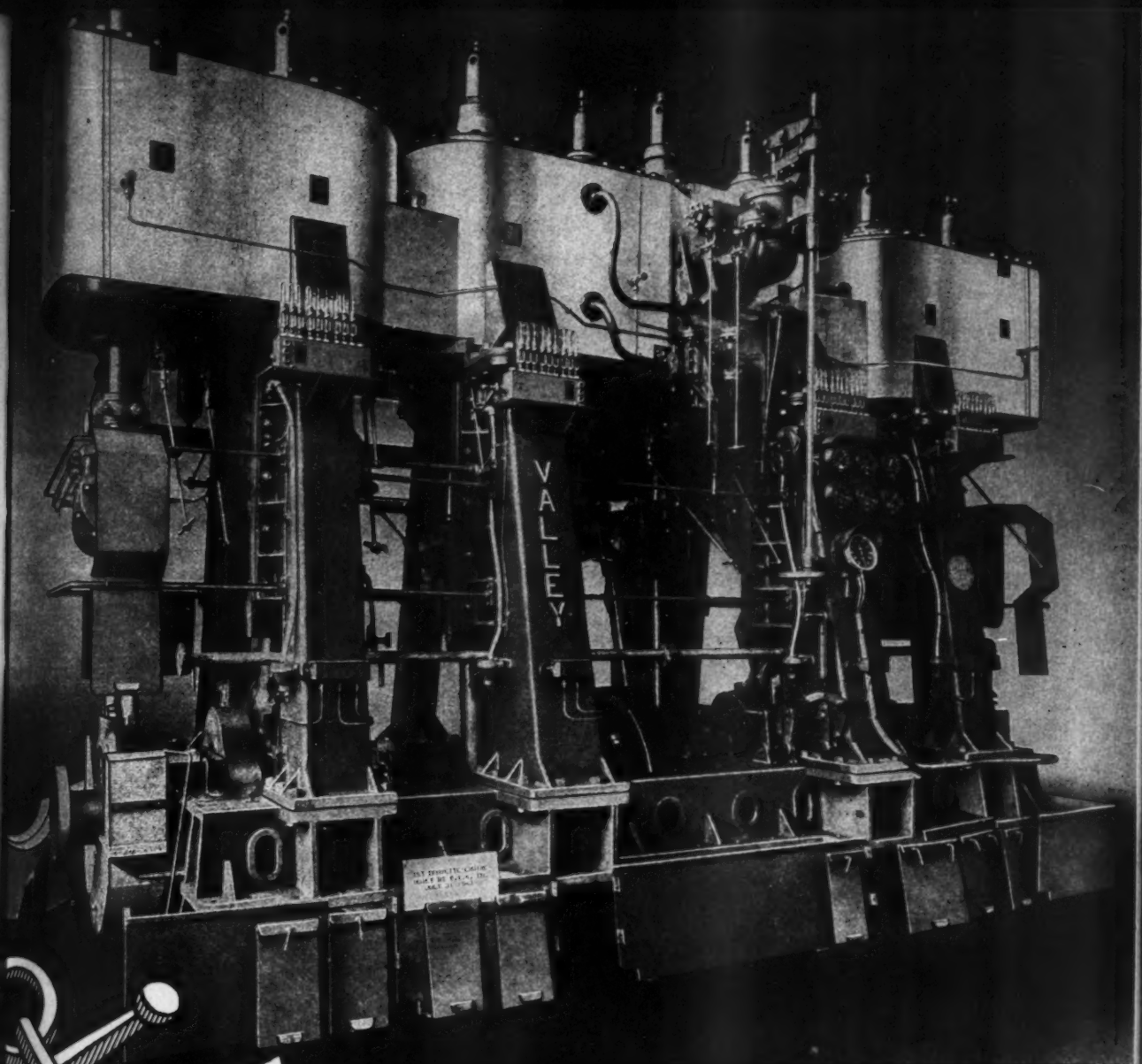

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Army REQUIREMENTS *Navy* CONFERENCE

sponsored by the TECHNICAL ASSOCIATION of the Pulp and Paper Industry

▶▶▶ A NATION AT WAR must give first consideration in everything to the requirements of its fighting forces. In fulfilling that obligation to its Army, its Navy, and its citizens, our country has mapped out a highly efficient program to raise its military requirements to the highest possible degree of effectiveness and to bring its wartime production of all essential commodities up to the necessary peak.

One of the most essential commodities needed by the Government and its Armed Forces is paper. In order to prove that paper and paper products might better meet the requirements of the Army and Navy, a conference was held at the Palmer House, in Chicago, September 21-24. This conference was attended by representatives of the Army and Navy, and was sponsored by the Technical Association of the Pulp and Paper Industry.

No longer can paper or its many uses be taken for granted. Following the manufacture of the implements of war, munitions, supplies, etc., and the production of foodstuffs that go to our armed forces in ever increasing flow, the transporting and packaging of these vital necessities insures their safe delivery to the war front.

At the Requirements Conference, the Army and the Navy learned many things about the manufacture of paper —things which gave them a deeper understanding of the problems facing the industry which produces this highly essential commodity. The TAPPI members who study and delve into the technicalities of paper manufacture, learned from the Army and Navy representatives much about the problems encountered in paper uses.

Quoting from one of the speakers at the Conference, "Paper is a substitute for many things, but there is no substitute for paper."

Eleven hundred persons registered at the Conference and all sessions were well attended.

The opening on Tuesday morning was colorful and stirring. The Grand Ball Room of the hotel was filled when the Color Guard of the Great Lakes Naval Training Station presented the Colors. The great audience joined in the National Anthem, led by the Great Lakes Naval Training Station Band, with Lieutenant Commander Eddie Peabody, director.

A short period of entertainment by the Great Lakes Band, with selections by Lieutenant Commander Peabody preceded the opening of the Conference by Ralph A. Hayward, national president of TAPPI.

The first speaker introduced by President Hayward was a Navy officer with more than thirty-seven years of Navy experience. Rear Admiral Everett G. Morsell (SC) USN, District Supply Officer, Ninth Naval District,

R. A. Hayward, national president of TAPPI (standing), introduced these two speakers at the opening session of the Conference: Left—Rear Admiral Everett G. Morsell (SC) USN, District Supply Officer, Ninth Naval District; and (right) Brigadier General E. E. MacMorland, Office of the Chief of Ordnance USA.

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R. A. Hayward, national president of TAPPI, opened the Conference.

Great Lakes, Illinois, took over his present assignment the latter part of 1942. He was then just back from Australia, where he spent six months on the staff of General Douglas MacArthur. Prior to that, Rear Admiral Morsell was through the attack on Corrigedor and Bataan. He was stationed in the Philippines a year before the outbreak of the War as Supply Officer at the Cavite Navy Yard. His record shows hazardous war experiences and miraculous escapes from enemy attacks. He also saw service in World War I.

The address delivered by Rear Admiral Morsell on the subject "Navy Supply Lines," was packed with reasons for the protection and safe delivery of all supplies classed as naval requirements. He closed his appeal to the industry with one thought: "The Navy knows it can count on you to make it possible for all producers of the supplies we require to 'pack it right to reach the fight.' "

The second address at the opening session of the Conference was delivered by Brigadier General E. E. Mac Morland, Office of the Chief of Ordnance, U. S. A., who has seen service in the war theater of the Pacific. He returned to the States a year ago, having spent about a year in Chungking, China, as Chief of Staff, U. S. Military Mission to China, and in the Far Eastern Theater of Operations. He had previously been assigned to duty in the Philippines. He served in World War I, and his military record is one of service and achievement. He has been decorated with the Order of the Purple Heart and also was awarded the Distinguished Service Order by the British Government.

Brigadier General Mac Morland opened his address on the subject "Paper Sinews of War," with a few words of highest recognition of the paper industry and its place in the war effort. He said: "We have found in the Army that this is not entirely 'the age of steel.' If we were to define these times in terms of our materials, I suppose we should call it the age of combined materials. Of steel, of aluminum, oil, wood, plastics—and not least among them, paper—all combined in new ways. So it is that paper has become one of the sinews of war."

The addresses by Rear Admiral Morsell and Brigadier General Mac Morland set the keynote for the entire Conference. These addresses were delivered between 10:00 and 10:30 A. M. Tuesday morning; they were recorded by Station WGN, Chicago, and broadcast at noon that day.

The second part of the program on Tuesday morning consisted of the United States Navy Session. This program was arranged by Lieutenant (jg) Winfield Scott Hassler. R. A. Hayward, TAPPI president presided. An address on the subject "Navy's Packaging Problems," was given by Lieutenant C. S. MacNair and P. P. Kennedy, of the Containers Sections. In connection with this address a film was shown displaying the effects of improper packaging. Completing the Navy Session there were two addresses: Packaging Materials Required for Preservation, by Lieutenant (jg) D. R. Weedon, Jr., Philadelphia Naval Aircraft Factory; and "How To Do Business With the Navy," by Lieutenant (jg) Robert Faegre. An address scheduled for the Navy Session by Frederick G. Barber, of the Containers Section was presented as the first paper of the afternoon session.

The United States Army Session, which was arranged by Major Malcolm J. Odell, ASF, continued throughout the afternoon on Tuesday. Nine important papers by Army officers covered practically all phases of the Army's packaging problems.

At the end of a day that had been devoted to a full presentation of the Army and Navy paper requirements, those attending the Conference were entertained at a Fort Dearborn Dinner Party Tuesday evening in the Grand Ball Room. This delightful event was arranged in co-operation with the Paper and Twine Club, and it was an evening brimful of good fellowship, fun, and a vaudeville show by a group of headline entertainers. The fine dinner that was served did not keep those present from joining lustily in many old, favorite songs. Ticket stubs had been collected and during the evening, numbers were drawn. Several war bonds and war stamps were distributed to winners. W. H. Monsson, Hooker Electrochemical Company, and chairman of the entertainment committee, acted as master of ceremonies.

Beginning Wednesday morning, the 22nd, a number of sessions were held, each devoted to the problems of the various groups. At 9:00 there was the Ordnance Packaging Session, with J. D. Malcolmson as chairman. At 9:30 the Acid Pulping Session held a round table with George H. McGregor presiding as chairman. At the same time, Walter M. Bain as chairman, presided over the Coatings and Adhesives Round Table.

The luncheon on Wednesday was one of the highlights of the Conference. The tables in the Grand Ball Room were filled, and just after the luncheon was served, Walter C. Daley, chairman of the Advisory Committee of the Conference, asked Ralph A. Hayward, president of TAPPI, to preside. President Hayward introduced to the gathering the Board of Governors of the American Paper and Pulp Association, and the Executive Committee of TAPPI. He then introduced Grover Keeth, past president of the Superintendents Association; Norman T. Beardsley, president of the Salesmen's Association; E. W. Tinker, executive secretary of the American Paper and Pulp Association, and George H. Mead, president of the American Paper and Pulp Association.

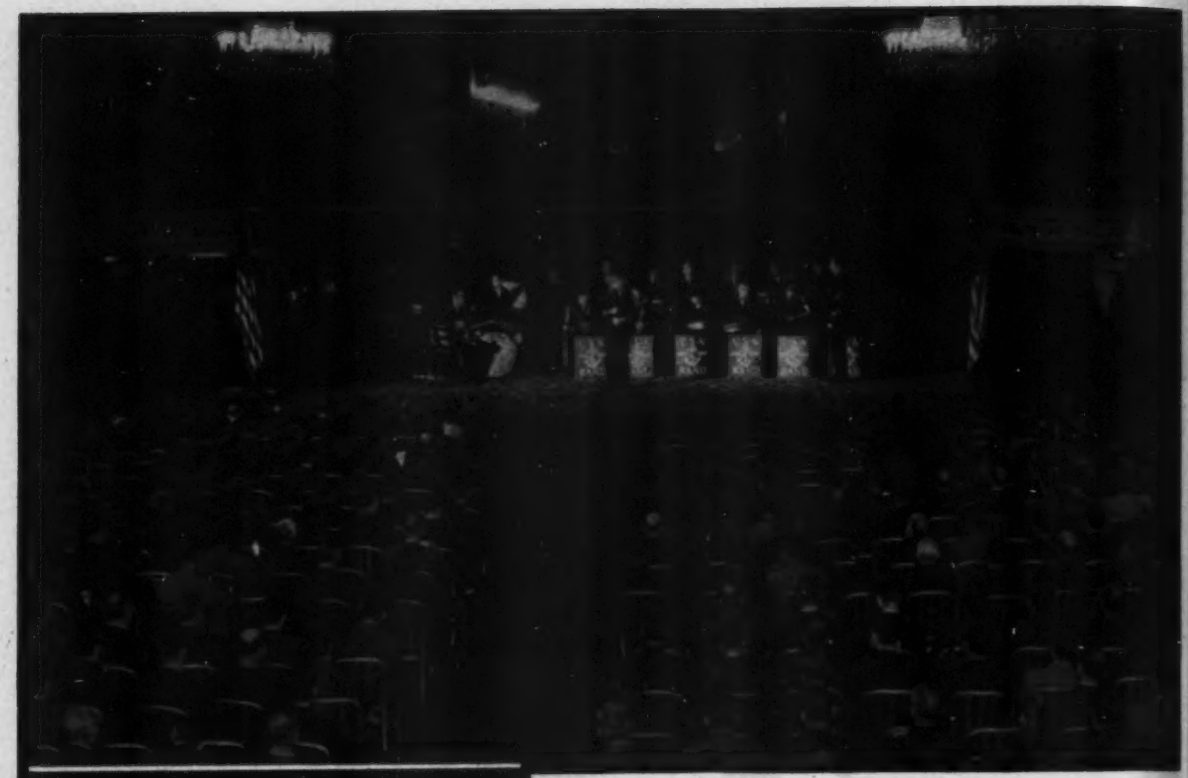
President Hayward then announced that it had been expected the Conference would hear from Harold Boeschenstein, director Production Controls Bureau, of the WPB, but Mr. Boechenstein had been unable to attend. A letter from him to the Conference was read by President Hayward. In his letter, Mr. Boeschenstein promised the

ARMY E NAVY

CLARK TRUCTRACTOR

DIVISION OF CLARK EQUIPMENT COMPANY

BATTLE CREEK, MICHIGAN, U.S.A.



The Conference opened with the stirring music of Great Lakes Naval Training Station Band, under the direction of Lt. Cmdr. Eddie Peabody, who entertained with several numbers (at left).

full support of WPB to relieve the pulpwood situation. He asked the industry to consider all economies possible and to study methods of relieving the pressure wherever possible.

President Hayward then turned the "mike" back to Chairman Daley, who introduced the guest speaker, Colonel Robert R. McCormick, editor and publisher of the *Chicago Tribune*. In a short address, Colonel McCormick summarized the story behind the development of the *Tribune's* paper mills at Thorold, Ontario, and Baie Comeau, Quebec.

Simultaneous meetings were held during Wednesday afternoon for the following groups: The Army, Navy, and WPB Session, with Harry E. Weston as chairman (this included the Army and Navy Panel); the Technical Session, presided over by W. R. Zwecker; Alkaline Pulping Round Table, with Sidney D. Wells as chairman; and Papermaking Round Table, presided over by A. E. Bachmann. The Army and Navy Panel, which was a part of the Army, Navy, and WPB Session, took up questions and suggestions which the delegates had placed in a box at the registration desk following the presentation on Tuesday of addresses covering the paper and packaging problems of the Army and the Navy. Milton Schur, of Brown Company, acted as co-ordinator at the Panel; he was assisted by Walter Swanson, of Kimberly-Clark Corporation. The Panel was continued over in part to Thursday morning, with C. E. Waring as co-ordinator.

At 5:00 on Wednesday afternoon, a large number of delegates were taken on a tour through the plant of the *Chicago Tribune*. In addition to seeing the printing of a metropolitan daily newspaper, they also saw motion pictures of paper mill operations at Thorold, Ontario, and at Baie Comeau, Quebec, as well as the new alcohol plant at Thorold.

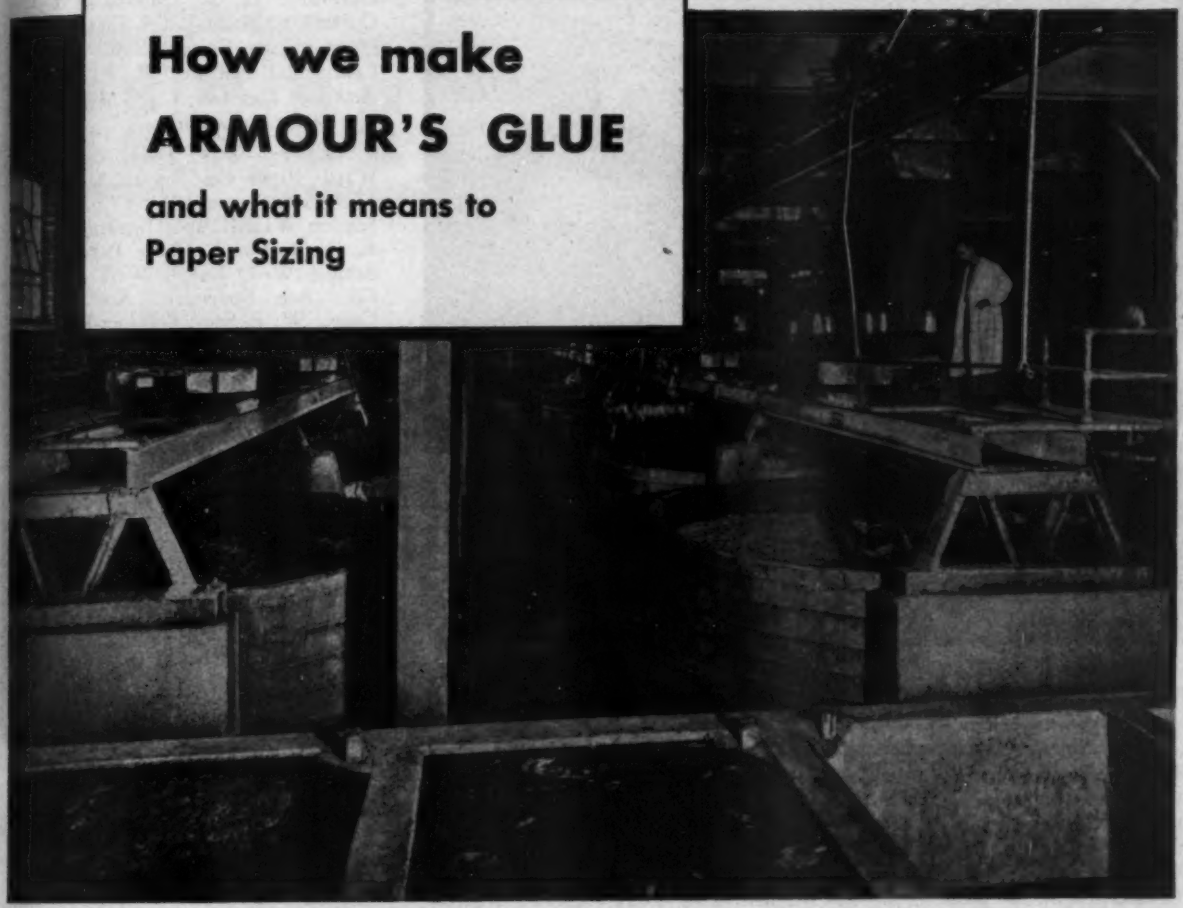
Later that evening, those who wished were admitted to a radio broadcast by the Northerners at the WGN studios. The octet quite fittingly chose as one of its selections, "Trees," adapted from Joyce Kilmer's poem.

On Thursday, the last day of the Conference, two sessions were held in the forenoon. The Technical Session was presided over by Vance Edwardes. The Case Studies Session was in charge of Harry E. Weston, who substituted for R. A. Diehm, who was not able to attend. At 9:30 that morning the Container Testing Committee met with A. W. Nickerson as chairman.

Although a full afternoon was devoted to the Water Vapor Permeability Testing Session, with W. H. Graebner as chairman, the luncheon on Thursday seemed to bring the meeting to a close.

How we make ARMOUR'S GLUE

and what it means to Paper Sizing



These wash mills clean the raw materials for fine glue

To these giant wash mills comes the limed stock from which Armour's hide glue will be made. In this vitally important second step in the preparation of quality glue, all impurities, all waste material and alkali are removed from the stock.

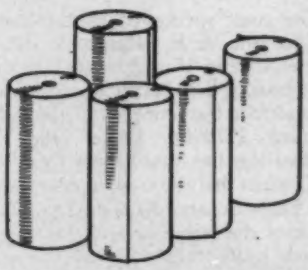
This process appears simple. It is not. The washing time must be frequently checked, as it varies for each batch of material. The pH value must be most carefully determined. The precise moment when the washing operation has readied the material in the mill for the cooking vat must be charted by laboratory analysis.

Efficient Paper Sizing Depends on the Wash Mill

The end function of this process is to prepare grease-free hide glue with the high jelly strength, viscosity and tensile strength... and with the toughness, pliability, light color and clarity required for paper sizing.

Thus the wash mill is an important factor in efficient sizing. But it is only one of many scientifically controlled processes that contribute to the quality of Armour's Glue.

At present, demand for certain grades of Armour's Glue is greater than supply. And while we may be unable to supply exactly the grade you want, we will be glad to discuss your problems with you with a view to suggesting more efficient use of the available glue.

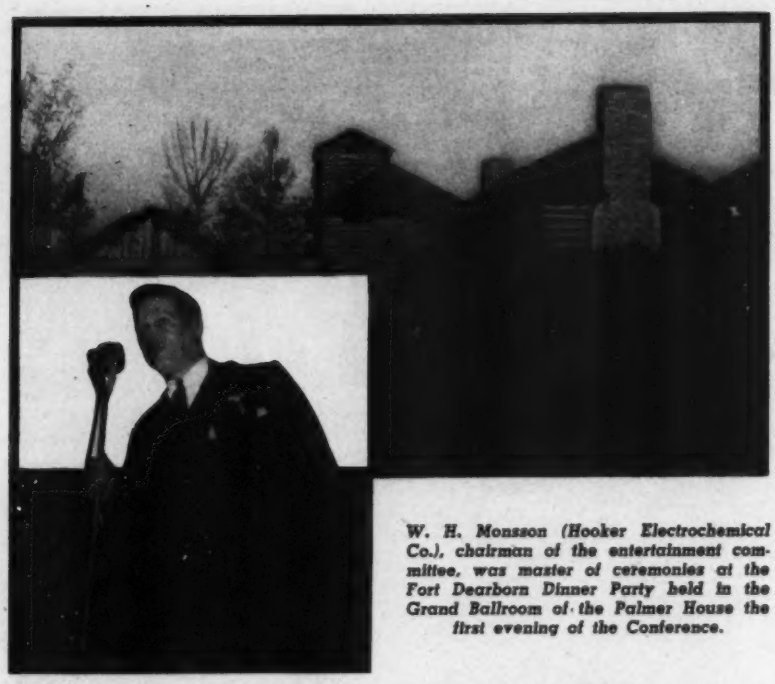


Glue it for good with Armour's

ARMOUR *Glue* DIVISION

Manufacturers of Hide Glue, Bone Glue, Flexible Glues, Soluble Dried Blood, Blood Albumin

1355 WEST 31ST STREET, CHICAGO 9, ILLINOIS



W. H. Monsson (Hooker Electrochemical Co.), chairman of the entertainment committee, was master of ceremonies at the Fort Dearborn Dinner Party held in the Grand Ballroom of the Palmer House the first evening of the Conference.

The luncheon meeting in the Grand Ball Room was presided over by A. E. Montgomery. Following the luncheon, Chairman Montgomery announced that President Hayward had requested time to say a few words. Mr. Hayward made a few highly interesting remarks in regard to the industry and its post-war problems. He also complimented the careful work and planning that had made the Conference a success. After President Hayward spoke, Chairman Montgomery introduced each of the committee chairmen who had worked for the success of the Conference.

The guest speaker at the luncheon was the Hon. A. E. Giegengack, Public Printer of the United States. In his first remarks, the speaker placed before his audience the problems of the Government Printing Office, and he stressed the fact that orders from the GPO mean that the Government needs that paper to carry out some important phase of the war program. Mr. Giegengack related some of the obstacles the Government Printing Office has had to overcome in order to do the work required of it.

Though the city offered many attractions to the visitors, most of them spent the greater part of their time at the Conference and in the Exhibit. Many delegates took advantage of the privilege to go through large printing plants in the city: the *Chicago Tribune*, R. R. Donnelley & Sons Company, and the W. F. Hall Printing Company.

The ladies who attended had special headquarters at the hotel, with regular Club accommodations.

Throughout the Conference, expressions were heard on every hand indicating the confidence felt by all in the strength and ability of our Nation and its Allies to win a complete Victory. However, the paper industry's responsibility for one of the most essential commodities needed to win the War was voiced through its technical men in all sessions, and the complete co-ordination of industries with government agencies was understood more than ever by all present at the Conference.

At the opening of each of the luncheons and the dinner party, the house lights were dimmed and a spotlight and breeze played on the Stars and Stripes. As those present joined in the National Anthem, more a prayer than a melody were the words:

'Tis the Star Spangled Banner,
Oh, long may it wave,
O'er the land of the free,
And the home of the brave.

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Convention Committees

Those in charge of planning the Conference consisted of the following personnel:

General Chairman, A. E. Montgomery, J. O. Ross Engineering Co.

Secretary-Treasurer, Kathleen Carey.

Program Exhibition—Harry E. Weston, chairman, Fritz Publications, Inc.; W. R. Zwecker, Seaman Paper Co.; R. A. Diehm, Container Corporation of America; C. E. Fawkes, Pyroxylin Products, Inc.; G. Davidson, Glenn Davidson; D. L. Quinn, Don L. Quinn Co.; Major J. d'A. Clark, U. S. Quartermaster Corps; C. R. Bredon, Continental Can Co.; R. P. Bigger, American Can Co.; C. S. Miner, Jr., The Miner Laboratories.

Advisory—W. C. Daley, chairman, Watab Paper Co.; Irving McHenry, Mid States Gummed Paper Co.; H. K. Snyder, Waxed Paper Institute, Inc.; E. D. Buchanan, Moser Paper Co.; Samuel Weil, Joseph Weil & Sons Co.; Ace Fessenden, Ace Carton Corp.; W. E. Sooy, Gardner-Richardson Co.; C. C. Whinery, R. R. Donnelley & Sons Co.; George K. Gibson, Moisinee Paper Mills Co.; Paul Butler, Butler Paper Corp.

Finance—P. J. Massey, chairman, H. P. Smith Paper Co.; E. D. Buchanan, Moser Paper Co.; O. W. Calligan, Edgar Bros. Co.; W. C. Daley, Watab Paper Co.; P. M. Foster, Williams-Gray Co.; W. A. Geiger, Weyerhaeuser Timber Co.; W. E. Phillips, Mathieson Alkali Works, Inc.

Publicity and Printing—A. J. McAneny, chairman, Bradner, Smith & Co.; H. W. Hall, The Dicalite Co.; Phil A. Howard, Howard Publishing Co.

Entertainment—W. H. Monsson, chairman, Hooker Electrochemical Co.; J. B. Clarke, National Aniline & Chemical Co.; J. P. Strasser, Stein Hall Mfg. Co.

Transportation—A. A. Coffin, chairman, Titanium Pigment Corp.

Arrangements—W. M. Bain, chairman, Glidden Co.; H. R. Alley, Tested Paper of America, Inc.; J. J. Bedja, Sears, Roebuck & Co.; A. C. Embshoff, Infilco, Inc.; O. W. Frost, U. S. Gypsum Co.

Registration—W. A. Chapman, chairman, Robert W. Hunt Co.; L. L. Birdsall, General Chemical Co.; L. G. Van De Bogart, Crane Co.; R. A. Olson, Glidden Co.

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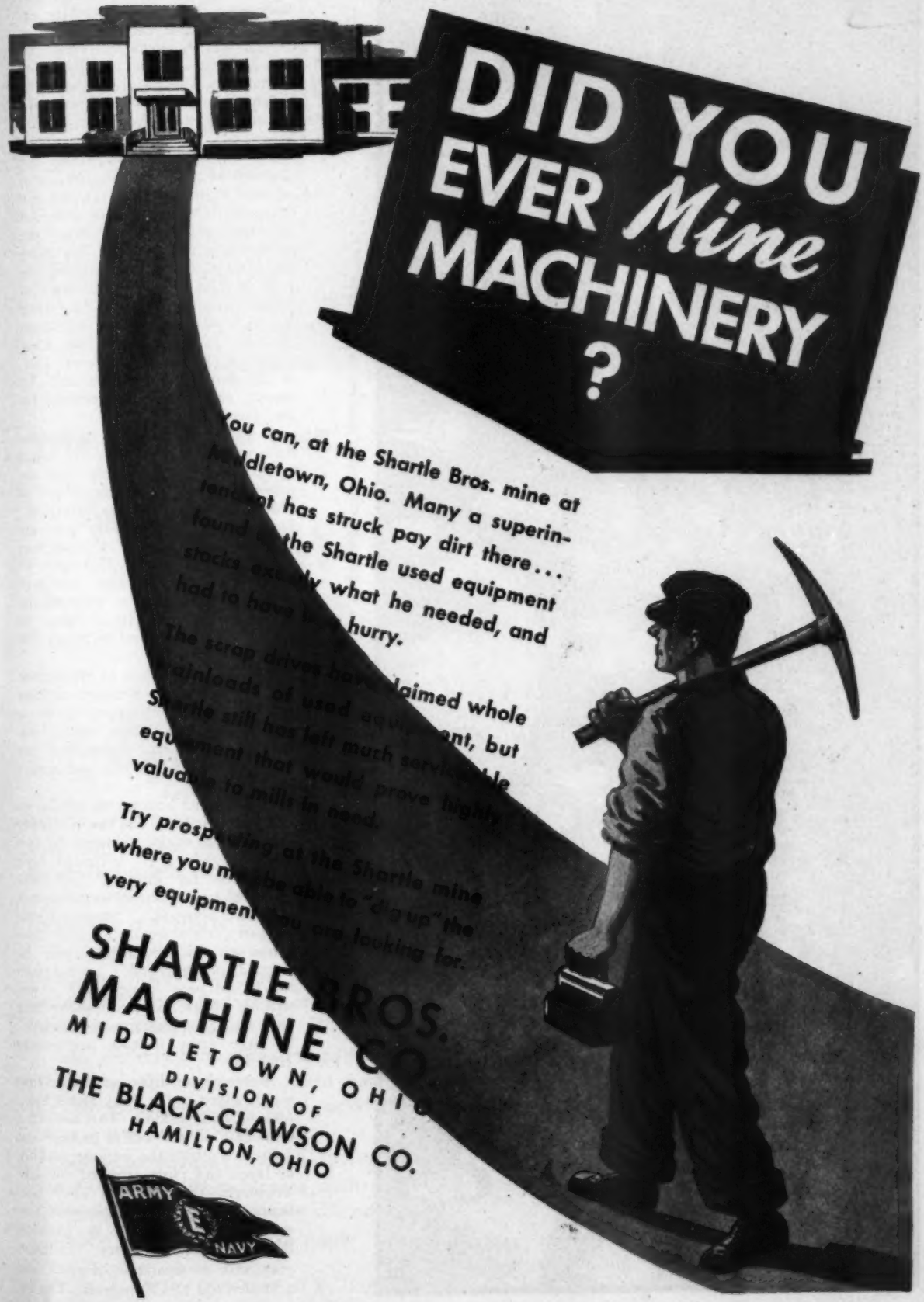
ARMY AND NAVY EXHIBIT

▶▶▶ THE ARMY AND NAVY EXHIBIT filled the spacious exhibit hall of the Palmer House. Eight branches of the Army had exhibits, each one an object lesson in proper packaging. The Navy exhibits which filled one long aisle of the hall, displayed the packaging of practically every type of supplies used by the Navy. The Marine Corps and the Air Corps also were represented.

The first Army and Navy exhibit of this kind was shown at the annual meeting of TAPPI in February of this year. A more expanded exhibit was


DID YOU EVER Mine MACHINERY ?
ou can, at the Shartle Bros. mine at
dletown, Ohio. Many a superin-
t has struck pay dirt there...
the Shartle used equipment
what he needed, and
hurry.
aimed whole
nt, but
Try pros ing at the Shartle mine
where you m be able to "dig up" the
very equipmen ou are looking for.
SHARTLE BROS.
MACHINE CO.
MIDDLETOWN, OHIO
DIVISION OF
THE BLACK-CLAWSON CO.
HAMILTON, OHIO
ARMY
E
NAVY

General view of Grand Ballroom during the luncheon meeting on Wednesday. (Closeup of speakers' table on page 736.)

shown at the American Management Association in the spring, but the exhibit displayed at the Conference in Chicago was an expanded form of the others. In addition to the many exhibits, motion pictures relating to packaging and the War were shown continuously throughout the exhibit hours.

The entire exhibit was under the direction of S. G. Somers, director of exhibits, Public Relations Department of the War Department; the design of the Army exhibit was by H. Van Cott, of the War Department. The Navy Department exhibit was prepared by J. R. Wilson, of the Department of Labor. Arrangements for the Army displays were supervised by Major Malcolm J. Odell, ASF, and Lieutenant (jg) W. S. Hasseler (sc), of the Bureau of Supplies and Accounts, supervised arrangements for the Navy exhibits.

It would take volumes to describe these exhibits even if one felt equal to such description. Never did any trite saying so describe any subject as "Must be seen to be appreciated." Even men in the industry who are close to the magnitude of paper uses found many surprises. Therefore, we won't attempt description, but will only give you a peek at some of the interesting spots. (Illustrations referred to will be found on pages 738 and 739.)

Almost in the center of the exhibit hall was a Pratt & Whitney airplane engine completely wrapped to insure moisture control. There was a collapsible wooden box so designed that it may be knocked down and reused (No. 5).

In the corner housing the exhibit of the Army Air Force one saw . . . ready run-in plane engine cylinders in two types of packing . . . cleated fiber board box for shipping fuel cells (self-sealing gasoline tanks) designed to replace plywood . . . various forms of spare parts wrapping . . . fiber container in which parachutes may be shipped and reshipped . . . metal parts which had been sprayed with a waterproof plastic to protect them from moisture . . . application of "Kimpak" to wrap many delicate instruments (No. 1).

A mounted exhibit in this section was arranged by the Buick Motor Div., Melrose Park, Illinois. This showed a cylinder head and barrel package cut away to illustrate the intricate packing of layers and plugs required for safe shipment. (See No. 3.) The container was made throughout with V3c waterproof board, 400 lb. bursting test immersed in water 72 hours plus, with no separation of plies, and a Mullen test of 150 pounds. The in-

THE CASE OF THE *TALKING TICKET*

COLOR serves busy conductors on commuters' trains. They can tell at a glance whether the ticket is for the current month. No time is lost in close scrutiny . . . and the chances of "non-profit" riding are reduced to a minimum.

Throughout the transportation field and in war plants and offices—whenever speed and accuracy are sought—you'll find color and paper teamed together and doing a *big* job.

Color distinctions on paper record forms, orders, job tickets, tags and labels speed manufacturing and distribution—provide quick, positive identification, lessen or eliminate errors.

Veteran employees can frequently step up their output—and new help is more easily trained—when color and paper are fully utilized.

But the dyestuffs that make paper "talk" must be selected carefully—made to work most efficiently in their million and one tasks—and applied with an eye toward conservation.

Du Pont Dyestuffs technicians can help you in this task—as well as in the job of coloring today's paper products and specialties. With their practical experience, they can help you unite dyes and paper most effectively, most economically. E. I. du Pont de Nemours & Co. (Inc.), Organic Chemicals Department, Dyestuffs Division, Wilmington, Del.

BACK THE ATTACK WITH WAR BONDS

DU PONT DYESTUFFS

DYESTUFFS

BETTER THINGS FOR BETTER LIVING . . . *THROUGH CHEMISTRY*

Seated at the speakers' table at the Wednesday luncheon were: (L to R): A. E. Montgomery, (J. O. Ross Engineering Co.) general chairman; O. P. Gephart (B. F. Goodrich Co.), Pierre Dwersen (Hinde & Dauch Paper Co.), and A. E. Bachmann (Mississquoi Corp.), members of Executive Committee of TAPPI; E. W. Tinker, executive secretary, American Paper and Pulp Association; Grover Keith (Marathon Paper Mills Co.), past president of American Pulp and Paper Mill Superintendents Association; Vance P. Edwardes (International Paper Co.), vice president of TAPPI; Col. Robert R. McCormick (editor and publisher, "The Chicago Tribune"), guest speaker; Walter C. Daley (Watab Paper Co.), who presided at the luncheon; R. A. Hayward (Kalamazoo Vegetable Parchment Co.), national president of TAPPI; George H. Mead (The Mead Corp.), president of the American Paper and Pulp Association; Norman T. Beardsley (Union Bag & Paper Corp.) and Burt B. Fisher (Bergstrom Paper Co.), vice presidents of the Salesmen's Association of the Paper Industry; Douglas Jones, secretary-engineer Tech. Sec. Canadian Pulp and Paper Association; W. E. Brown (Pejepscot Paper Co.), a member of the Executive Committee of TAPPI and R. G. Macdonald, secretary-treasurer of TAPPI

Col. Robert R. McCormick, editor and publisher of "The Chicago Tribune," was the guest speaker at the Wednesday luncheon.

side liner of the outside container completely encircles the carton and prevents parts from falling out of lock pads. It is made of V3 double wall board. The rocker box pads are of P-12 Grade A laminated, greaseproof paper to prevent critical metallic surface from contact with acid bearing kraft corrugated board.

The Signal Corps exhibited transmitters and radio Walki-Talki sets, showing the extreme need for careful packing. There were dry cell batteries packed in waterproof papers and thoroughly sealed. Teletype paper rolls were shown packed in specially prepared and processed paper bags with waterproof lining. Bags were shown completely sealed (No. 2).

The Ordnance Department exhibited the care with which arms must be packed. A box packed for export showed a 30 cal. M1 Carbine, the metal parts of which were treated with corrosion preventive and inserted in greaseproof, moistureproof bag. . . . Tank telescopes were displayed, both packed and ready for sealing . . . special cartons were shown for packing tubes and plugs and packing for fuse containers (No. 4).

In the Transportation booth, many types of tags, labels and special forms were exhibited. Over all was displayed the motto "Overseas shipments must be marked right." All of which convinced the visitor that it takes proper packaging and strapping, as well as proper marking, to insure safe delivery.

The Marine Corps exhibited types of packages needed to send supplies to the Marines who fight both on the sea and the land. There were new export fiber boxes, asphalt construction, sealed with waterproof tape . . . samples of Marine Corps Vim Board

Final Preparation for a long, useful life!

With the skill born of long experience, POWELL craftsmen "finish" the product that will honor the family motto—"Standard for Control." These valves started their career from the point of an engineer's pencil—part of the process of POWELL's creative cooperation with technical and maintenance staffs. In every process of manufacture these valves have been tested to POWELL's pre-determined requirements for material, function, longevity . . . to the letter of the law of POWELL's specialized manufacture of valves and nothing but valves.

The Wm. Powell Company

Dependable Valves since 1846

Cincinnati, Ohio

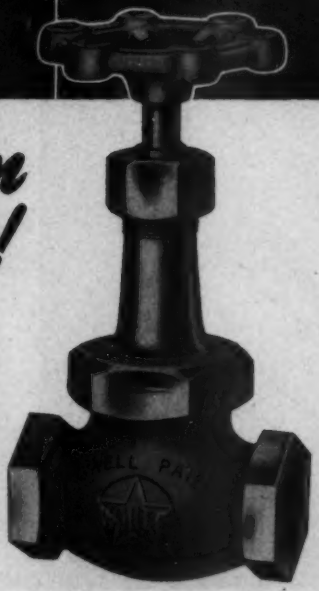


Fig. 1706—Bronze Globe Valve for 200 pounds W. P. Has screwed ends, union bonnet, renewable seat and regrindable, renewable hard bronze semi-cone plug type disc—especially adapted for throttling service—for the control of low-pressure steam, oil, water, gas, etc.

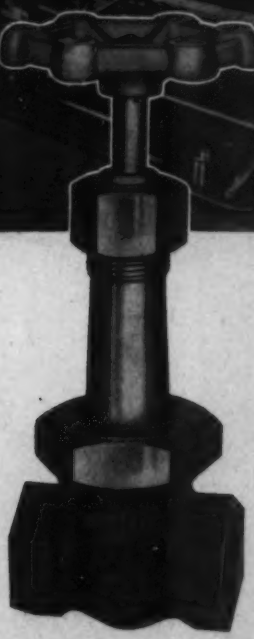


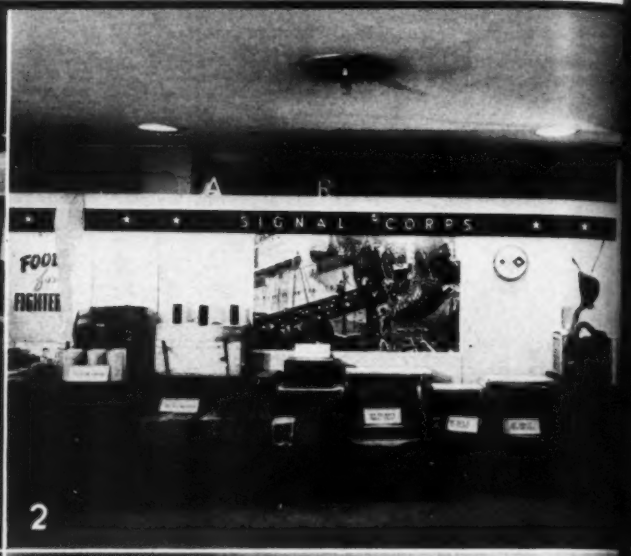
Fig. 375—Bronze Gate Valve for 200 pounds W. P. Has screwed ends, union bonnet, inside screw rising stem and a special hard bronze disc.

POWELL VALVES

Conference Exhibit Arranged by the **Army** and

A story about the Army and Navy exhibit, beginning on page 732.

1



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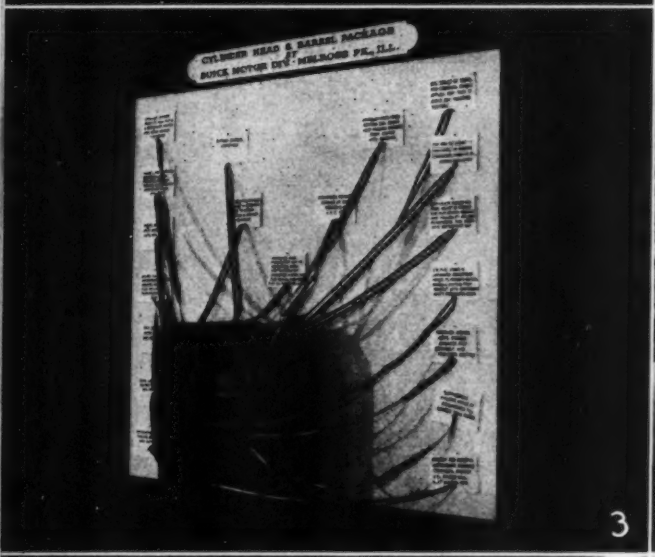

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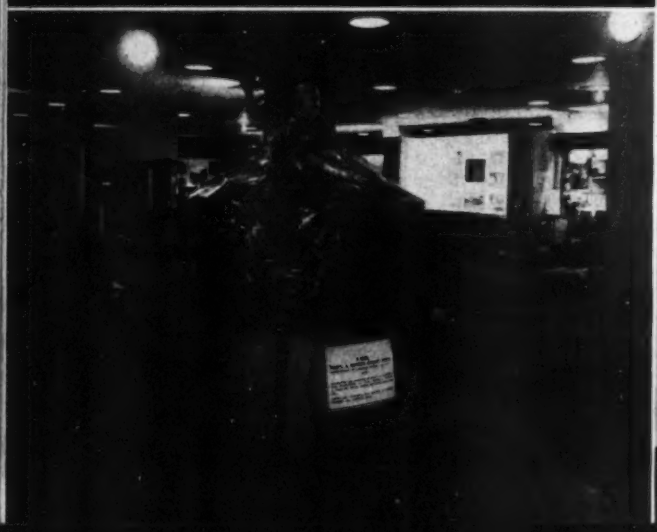

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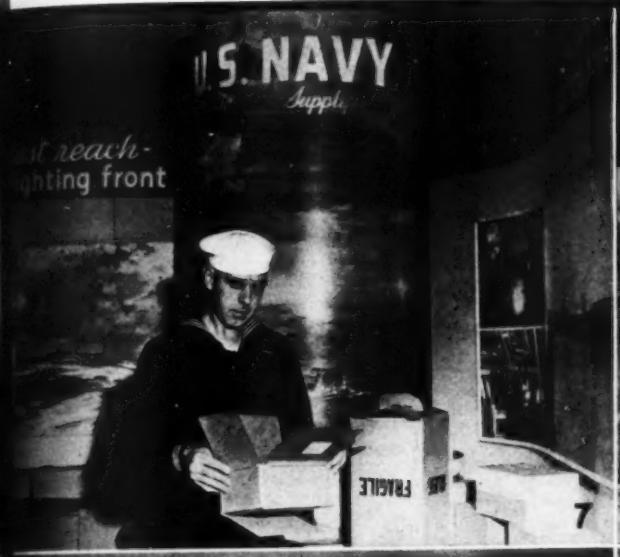
6

the **Navy** Prove the Need for Proper Packaging

includes references to the pictures shown on these pages.



were displayed. There was a completely waterproof container for U. S. Marine Corps field "Walkee-Talkee" radio sets. (No. 11—The lady in the picture is Sergeant Gloria Downs, of the Marine Corps.)

Displayed by the Quartermaster Corps was a large and assorted group of supplies, particularly food items, packaged and packed in paper and paper products . . . fiber board, glassine, cellophane, and laminated papers. The newly developed Ten-in-One Ration was featured. It supplies a day's complete food for ten men, in compact form. (No. 6 shows Captain Wilfred C. Lock, of the Quartermasters Corps, who with Captain Herman C. King were in charge of that exhibit.)

Along the Navy aisle were a large variety of exhibits. Murals showed the Navy in action flanked by significant mottoes: "U. S. Navy guarding our supply lines" . . . "Supplies must reach the fighting front." (No. 7—Displaying the proper type of carton is John David Perryman, first class seaman, Great Lakes Naval Training Station.)

The Navy Paper Section showed the various papers, board, and paper products needed by the Navy (No. 9). Navy clothing, which includes everything from overcoats, trousers and neckties to blankets, pillows, and brushes, were shown packed and strapped ready for shipment anywhere. (No. 12—Wondering which box contains his winter overcoat is A. J. Schjervheim, second class seaman, Great Lakes Naval Training Station.)

Prominently displayed was a Navy Paper Cargo Parachute, made of specially creped kraft paper. This parachute has a capacity of 100 pounds released at 150 knots (approximately 180 m.p.h.). (No. 8—The sailor smiling about it all is Vernon Ferris, storekeeper second class at Great Lakes Naval Training Station.) The sweep of the parachute is illustrated in No. 10.

The Bureau of Accounts and Supplies exhibited foodstuffs which require special packing protection. There were prunes in anti-infestation packages . . . battle ration for gun turrets with waterproof outer liner (the outer carton of 3 flute board to absorb shock distributed as single unit).

The Bureau of Aeronautics displayed papers for wrapping all motor parts and supplies. Containers, moisture impervious, non-hygroscopic, adhesive, and greaseproof wrapping paper.

The Chemical Warfare Service exhibited new waterproof package for 4.2 inch chemical mortar shell, two in a box. There was a service gas mask for soldiers in waterproof envelope and fiber box, and there also was a horse gas mask. There were laminated paper waterproof cylinders for 100-pound incendiary clusters. . . . Protective ointment for vesicant gases, and waterproof containers for colored smoke grenades and gas grenades.

ALL OF THE ARMY AND NAVY PAPERS given on the first day of the conference have been abridged and these abridgments will be found in this issue beginning on page 772.

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WAKEMAN ADDRESSES JOINT MEETING OF SUPTS. AND TAPPI

A joint meeting of the members of the New York-Canadian Division of the American Pulp and Paper Mill Superintendents Association and the New York State Section of TAPPI was held at the Queensbury Hotel, Glens Falls, New York, September 24-25.

The Superintendents Association elected the following new officers: Chairman, Herbert E. Karberg, Alliance Paper Mills, Ltd., Merritton, Ontario; First Vice Chairman, Hilliard D. Cook, Sweet Brothers Paper Manufacturing Company, Phoenix, New York; Second Vice Chairman, C. Ives Gehring, Oswego Falls Corporation, Fulton, New York; Third Vice Chairman, Jean Paul Rolland, Rolland Paper Mills, St. Jerome, Quebec; Secretary-treasurer, Stephen G. Stapley, Provincial Paper, Ltd., Thorold, Ontario.

J. Wesley Youngchild, retiring division chairman, presided at the meeting.

During the two days of the meeting, visits were made through the plants of Finch, Pruyn and Company and the Imperial Paper and Color Corporation, both of Glens Falls; Sandy Hill Iron and Brass Works, Hudson Falls, and the International Paper Company's plant at Corinth.

The program included a discussion of Fourdrinier Wires by Smith MacLandress of Glens Falls, representative of the Appleton Wire Works, Appleton, Wisconsin.

The associations were honored by the presence of two special speakers.

Arthur G. Wakeman, director of the Pulp and Paper Division of WPB, spoke before the meeting. He told the members that in spite of government controls and the manpower shortage, paper mills with determined effort are managing to meet production demands. He said that in the six-month period ending March 31, the paper industry had an annual production rate of 18½ million tons of paper and board. From that figure, the industry's peak production, with all its wartime difficulties has dropped to 17.7 million tons per year, which is "not so bad."

Mr. Wakeman pointed out that because paper plays such a vital part in the war effort, some regions are taking advantage of this fact to better their manpower positions instead of besieging Washington for help. Wood pulp campaigns are being conducted with poster displays and touring caravans displaying the essentiality of paper to the war effort. These appeals to patriotism have had their effect, he said, with the comment that "mills that are ambitious are bringing in the wood."

The speaker did not believe that war prisoners would be of much help as laborers in the woods. As of September 16, he said, there were reported to be 141,000 war prisoners over here. Many were wounded, making them unfit for work in the woods. Also the Geneva Convention governing the treatment of prisoners opposes their use in this occupation in hazardous areas. This is particularly true in the Northwest where there is much heavy timber. However, Mr. Wakeman did say that this plan is on trial at a few camps, and it may be possible to use more prisoners this winter.

E. G. Amos, secretary of the Industrial Relations Committee of the American Paper and Pulp Association, also spoke on the use of war prisoners in getting out pulpwood, and he also touched on the employment of more women. Mr. Amos reviewed the confusion under which the industry has been operating due to the delay in having paper declared an essential commodity. He stated that the most critical labor shortage areas are in the Northeastern and Lake States, and the industry hopes to be able to obtain the services of Italian war prisoners in this area for getting out pulpwood. The speaker also touched on the problem of absenteeism and referred to a survey which the industry has just completed on this subject. Work through personal management is already showing results, said Mr. Amos, but the percentage of reduction is not yet known. He also said that more women will have to be employed in the paper mills. In this connection, he recommended a deeper study into labor saving devices.

The meeting was a very profitable one, but there were the usual entertainment features. Golf tournaments, with prizes, were a big attraction, and the meeting ended with an evening of dancing at the hotel.

Dinner for One

protected by Paper

It is dinner time, in a fox-hole or on a patrol post, far from a field kitchen —and a fighting man must eat. The Army has taken care of that. It has planned a nourishing five-course meal, and two great industries, working together, have put that meal in the soldier's pocket.

The food industry has produced the compact dehydrated units for Dinner Ration K, and the paper industry has wrapped them, packaged them, protected them, from factory to front lines all over the world. Paper protects the precious contents from air and moisture, protects them against deterioration in color, flavor, nutritive value.

It is one of the wonders of World War II—one of the many dramatic, vitally essential contributions of the paper industry to the war program.

KENWOOD
WOOL PRODUCTS

F. C. HUYCK & SONS

Kenwood Mills

Albany New York

F. C. Huyck & Sons is proud to be serving an industry so essential to the war program. Our skill, our facilities and our 72 years of experience are always available in solving the special felt problems created by urgent wartime paper needs.

MIAMI VALLEY DIV. SUPTS. HEAR TALK ON POSTWAR PLANS

R. A. Dadisman, manager of the market development division of the American Rolling Mills, Middletown, Ohio, explained the operation of the National Committee of Economical Development, of which he is a member, at a meeting of the Miami Valley Division of the American Pulp and Paper Mill Superintendents Association, Saturday, September 18, at the Elks Country Club, Hamilton, Ohio. Mr. Dadisman explained the C.E.D. (Committee of Economic Development) purpose as the development of post-war plans by the larger businesses of the country who are offering their research to every business—no matter how small. The papermakers were gratified to hear that post-war planning is being carried out on a nation-wide scale, and the talk was enjoyed thoroughly.

The meeting, which was opened with a golf tournament in the afternoon, was attended by 130 members and guests. Top golfing honors were won by Sam Spadafora, of the Champion Paper & Fibre Company, Hamilton, Ohio, and E. Ginaven of the Bauer Bros. Company, Springfield, Ohio, who were tied for the low gross score. James R. Simpson of the Champion Paper & Fibre Company was closest to par with the lowest handicap. All three men received $25 War Bonds. These and other prizes were given through the courtesy of the Black-Clawson Co. of Hamilton, Ohio.

After dinner the meeting was formally opened by Retiring Chairman, S. R. Olsen, of the Champion Paper & Fibre Company, Hamilton, Ohio. The annual election of officers was held, resulting as follows: Chairman, G. H. Suhs, Sorg Paper Company, Middletown, Ohio; 1st vice chairman, James J. Andrews, Fox Paper Company, Lockland, Ohio; and 2nd vice chairman, Harold F. Bennett, Gardner-Richardson Company, Lockland, Ohio. Following the business meeting, Allan Hyer, of the Black-Clawson Company, awarded the golf prizes, after which Mr. Dadisman presented his talk.

● *We offer safe, economical solutions to all pulp and paper mill drainage problems with our twill weave, plain weave, sewed seam, and soldered seam wires.*

INTERNATIONAL WIRE WORKS

MENASHA, WISCONSIN

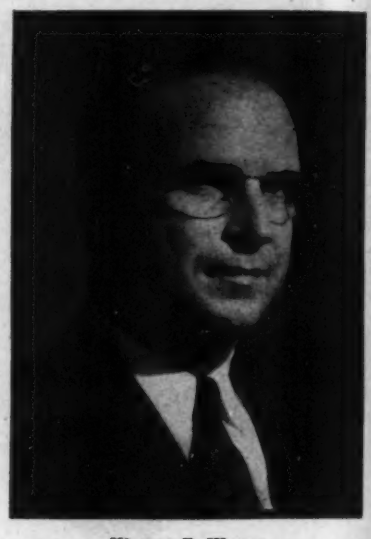
R. T. BINGHAM FOLLOWS V. WATERS AT TAPPI

A personnel change in the position of technical assistant to R. G. Macdonald, secretary-treasurer of the Technical Association of the Pulp and Paper Industry, has just recently been announced.

Vincent F. Waters, who has served in that capacity since 1938, is leaving to become editor of the *Southern Pulp and Paper Journal*, Atlanta, Georgia. Mr. Waters has had nearly twenty years of experience in technical and engineering work in the industry, and he assumes his new position with a background of unusual accomplishments.

Succeeding Mr. Waters at TAPPI headquarters is R. T. Bingham, who has been in the Paper Development Laboratory of Titanium Pigment Corporation. Prior to that, Mr. Bingham was associated with the Kimberly-Clark Corporation. He is a graduate of the Pulp and Paper Department of the New York State College of Forestry, Syracuse, N. Y.

R. T. Bingham



Vincent F. Waters

◆

EXHIBIT SPACE FOR THE CHEMICAL SHOW IS SOLD OUT

Former exhibitors and new applicants are already on the waiting list for possible extra space at the 19th Exposition of Chemical Industries, which will be held in Madison Square Garden, New York City, the week beginning December 6 next. Charles F. Roth, manager of the Chemical Industries Exposition states it is not likely there will be any more space available as most of the exhibits have already been planned.

From information now at hand, Mr. Roth states that the outfitting of the modern laboratory is a major influence in industrial progress, and he predicts that exhibits in this field will form an important focus of attention for many visitors at the exposition.

◆

NAT'L PAPERBOARD ASSOCIATION WILL HOLD ANNUAL MEETING

The annual meeting of the National Paperboard Association will be held at the Waldorf-Astoria Hotel, New York City, November 18 and 19.

An interesting program is being prepared which will include timely reports by officers, the election of officers for the ensuing year, and the consideration of important subjects, including the supplying of paperboard for war needs and the outlook for future activities.

FACILITATING DELIVERIES OF SEAMLESS STEEL TUBING

With wartime demands so urgent, these are a few of the facts to remember about *lengths* when ordering seamless steel tubing.

RANDOM LENGTHS—if the finished part is short enough to permit the cutting of an indefinite number of units without excessive loss—then you want *random lengths* when you order seamless steel tubing.

MULTIPLE LENGTHS—are most economical when tubing is to be reduced to a number of definite lengths, with a fair allowance for cutting loss.

EXACT LENGTH—is tubing purchased cut to a definite length . . .

Timken Seamless Steel Tubing is supplied in all three lengths, with hot or cold finishes, and in a wide range of sizes and grades of carbon, alloy and stainless steels.

Timken engineers will be glad to help you select the tubing most suited to your particular needs . . . to help you do the job quickly, economically, and well. Write: Steel and Tube Division, The Timken Roller Bearing Company, Canton, Ohio.

TIMKEN

TRADE-MARK REG. U. S. PAT. OFF.

SEAMLESS STEEL TUBES

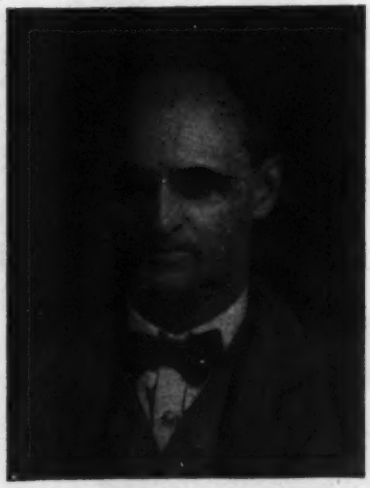
NAMES *in the* NEWS

Personals

DOWNINGTOWN MFG. CO. ELECTS ELLIS BROWN PRESIDENT

Announcement is made by the Downingtown Manufacturing Company, Downingtown, Pennsylvania, of the election of Ellis Y. Brown, Jr., as president of the company to succeed the late Charles L. Ellis.

Mr. Brown has served as first vice president, secretary and treasurer since 1941; he served as second vice president from 1932. He became associated with the company in 1902, and was



Ellis Y. Brown, Jr.

made treasurer in 1903. In addition to his office as president, Mr. Brown will continue to serve as treasurer.

Mr. Brown is a graduate of Haverford, and is prominent in business affairs in the city of Downingtown.

The policies of the company remain unchanged. Mr. Jacob Edge continues as vice president and sales manager. Enright A. Ellis remains as manufacturing manager, and E. T. Street as chief engineer.

◆

▶▶▶ *Harry J. Coon* has been elected a director of the E. B. Eddy Company and J. R. Booth, Limited. It is understood that he represents Garfield Weston on the boards of these two companies, control of which was purchased by Mr. Weston a few weeks ago.

PAUL E. COOPER V. P. & GEN. MGR. PACIFIC MILLS, LTD.

Paul E. Cooper, formerly deputy director and general manager of the Thames Board Mills, Limited, Purfleet, England, has been appointed vice president and general manager of Pacific Mills, Limited, British Columbia pulp and paper manufacturers with mills at Ocean Falls and Vancouver (British Columbia).

Mr. Cooper has been in the paper business for twenty years, ever since he joined International Paper Company as construction engineer. He participated in International's extensive construction program during the 1920's, and in 1929 he was appointed resident engineer of the Piercefield mill of International Paper Company in northern New York State. In 1933, he was transferred to the mill of Continental Bag & Paper Corporation, at Rumford, Maine, later becoming manager there. Soon after, he resigned to join Thames Board Mills in England, as chief engineer in charge of the design and construction of a new board mill at Warrington, Lancashire. When the job was completed in 1937, he took over the management of the mill. In 1941, he was appointed deputy director and general manager of the Thames Board Mills, with head office at Purfleet, Essex. The Thames Board Mills is the largest board producing and converting factory in the British Empire, producing all grades of board and converting into both solid and corrugated containers.

◆

▶▶▶ A new advertising manager has just been announced by the Falk Corporation of Milwaukee, Wisconsin. *Ralph H. Deihl*, director of the company's advertising activities since 1940, has joined the Army Air Force. He is succeeded by *Charles A. Petri*, who was national sales promotion manager of the Red Star Yeast and Products Company, of Milwaukee. Prior to that, he was with the advertising department of the Harley-Davidson Motor Company, of Milwaukee.

◆

▶▶▶ In his new position as manager of the specialty division of the General Electric Company's Electronics Department, *Howard W. Bennett* will be responsible for the engineering, manufacturing, and sales operations of that division. Mr. Bennett has been connected with the company since 1930. He has been manager of the renewal tube sales section since 1939.

E. C. ATKINS AND COMPANY ANNOUNCE NEW APPOINTMENTS

Two new appointments have just been announced by E. C. Atkins and Company, Indianapolis, Indiana.

Marshall Haislup, who for two years has been with the priorities department for the company, has been made manager of the company's export department, succeeding A. J. Nugent, former manager. He has been with the company for 22 years, serving in different capacities. He is a member of the Atkins Pioneer Twenty-Year Club.

George Hunter, formerly business manager of the company's armor plate division, recently received the appointment to sales manager of the industrial division of the company, succeeding R. F. Ellis. He has been with the company since 1927, and is responsible for perfecting a reorganization program for the company.

George Hunter

Marshall Haislup

DANGER!

BRITISH OFFICIAL PHOTO

LAND MINES OF TOMORROW

Like a careful soldier probing untried territory before advancing, today's business man must feel his way into *the unknown tomorrow.*

War's many and drastic readjustments on the home front pose many questions, will pose many more. And each question is a potential land mine, primed to blow up in the face of the short-sighted.

Wyandotte experts are old hands at anticipating changes in the field of industrial chemistry. Always in the van of today's developments, they constantly strive for the "feel" of the future and the technological changes it will bring.

Unflagging research in technical laboratories, constant experimentation with new techniques in war or peace . . . such is the background of Wyandotte men, *trained to expedite tomorrow.* Their counsel is yours . . . and they're always on call.

• Wyandotte Chemicals Corporation consolidates the resources and facilities of Michigan Alkali Company and The J. B. Ford Company to better serve the nation's war and post-war needs.

Wyandotte

OFFICES IN PRINCIPAL CITIES

WYANDOTTE CHEMICALS CORPORATION • MICHIGAN ALKALI DIVISION • WYANDOTTE, MICHIGAN

SODA ASH • CAUSTIC SODA • CHLORINE • BICARBONATE OF SODA • CALCIUM CARBONATE • CALCIUM CHLORIDE • DRY ICE

GEORGE WALKER LEAVES FINCH, PRUYN & CO.

The resignation of George K. Walker, manager of manufacturing of Finch, Pruyn and Company, Inc., Glens Falls, New York, has just been announced. He will be succeeded by Harold F. Bullard, formerly assistant to the president of the company.

Mr. Walker has been with Finch, Pruyn and Company for 24½ years; he has been manager of manufacturing for most of that time, and during his service to the company has devised numerous new manufacturing methods for use in the plant. Previous to his association with the company, Mr. Walker operated the Gilman Paper Company, Gilman, Vermont, for eight years. During World War I, he served as manager of the Pyrites mill operated by the old *New York World*.

◆

▶▶▶ Diamond Alkali Company, Pittsburgh, Pennsylvania, has announced the appointment of *Fred W. Fraley* as vice president and director of sales. A graduate chemical engineer, he has been associated with Diamond Alkali for the past 15 years, and his new promotion puts him in charge of all sales.

◆

GOSSMAN FOLLOWS FRANKENHOFF AS DICALITE PRES.

Announcement is made by The Dicalite Company, New York City, that A. L. Gossman has been elected president, succeeding C. A. Frankenhoff who becomes chairman of the board.

A. L. Gossman

Both of these gentlemen have had a long association with the company. Mr. Frankenhoff entered the field about 25 years ago and Mr. Gossman began in 1915.

▶▶▶ *J. B. Peake,* New York district sales manager of the Mathieson Alkali Works, Inc., New York City, has been appointed assistant general manager of sales for the company. In his new capacity, Mr. Peake will be assistant to D. W. Drummond, general manager of sales. He has been with the company since 1920.

◆

DR. RIPPIE NOW TECH. SUPERVISOR AT DIAMOND ALKALI

On September 1 Charles W. Rippie, Ph.D., became supervisor of technical service for the Diamond Alkali Company, Painesville, Ohio. Dr. Rippie will have his headquarters at Painesville. In addition to regular technical service, he will work in close collaboration with production, research and sales in establishing the new products which the company is adding to its line.

Dr. Rippie comes to the company from Monsanto Chemical Company; prior to that he was with the Shell Oil Company as assistant to vice president in the manufacturing and sales divisions. He is a graduate of the University of Illinois and a member of American Institute of Chemical Engineers, American Chemical Society, American Petroleum Institute, Society of Automotive Engineers, and Chemists' Club of New York.

◆

▶▶▶ The assistant manager of the Morgan Paper Company Division of the United States Envelope Company, Lititz, Pennsylvania, is now *Captain Walter G. Nooney,* of the Medical Department of the U. S. Army. Captain Nooney is at present attached to the Army Medical Purchasing Office, New York City, although his work necessitates his covering most of the Eastern Seaboard at the present time.

◆

▶▶▶ Because of ill health, *Paul C. Cabot,* of Boston, has resigned as director of the salvage division of the War Production Board. He will be succeeded by *Herbert M. Faust,* of Philadelphia, advertising manager of the Curtis Publishing Company.

◆

HERCULES APPOINTS HOGG SALES DIR. NAVAL STORES DEPT.

The Hercules Powder Company, Wilmington, Delaware, has announced the appointment of G. Fred Hogg as sales director of its Naval Stores department.

Mr. Hogg was formerly manager of the Naval Stores department office in Chicago, and has spent the past year at the company's industrial explosives plant in Hercules, California, where he served as technical assistant superintendent and chairman of the plant's War Manpower Committee.

◆

▶▶▶ A new director was elected at the annual stockholders meeting of Harris-Seybold-Potter Company, Cleveland, Ohio. The new board member is *A. T. Colwell,* second vice president and member of the board of directors of Thompson Products, Inc., and Thompson Aircraft Products Company.

A. T. Colwell

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▶▶▶ *Allan G. Strang,* formerly with the Soundview Pulp Company, Everett, Washington, is now with the sulphite division of Bowaters-Newfoundland Pulp and Paper Mills, Corner Brook, Newfoundland.

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▶▶▶ *Jim Davis,* former manager of the Ontario Paper Company's pulpwood plant, Thorold, Ontario, has resigned to take a position with Maine Seaboard Paper Company, at Bucksport, Maine.

◆

E. W. JONES LEAVES MANNING PAPER CO.

A recent announcement states that Everett W. Jones, former general operating superintendent of the John A. Manning Paper Company, Troy, New York, has been named vice president of the Modern Hospital Publishing Company. He will assume his new position November 1.

Mr. Jones has had a rather wide experience of work with regional, state and national hospital associations,

and is one of the founders of the Associated Hospital Service in New York State.

◆

▶▶▶ *T. E. Silver,* manager of mill operations, Abitibi Power & Paper Company, Ltd., Toronto, Canada, resigned his position October 1. He will be succeeded by *R. J. Askin,* formerly mill manager of the Thunder Bay Paper Company, Ltd., Port Arthur, Ontario.

◆

▶▶▶ For the past fourteen years, *Louis L. Shapiro* has served as chief chemist of Glyco Products Company, Inc., Brooklyn, New York. He has now been appointed manager of the company's plant in Brooklyn. Mr. Shapiro also has been director of the chemical and research departments and assistant suuperintendent with the Wilson-Martin Div. of Wilson and Company, Inc.

Necrology

V. S. DENISON

Prominent in the paper industry for his experience on paper machines, V. S. Denison, sales engineer with the Beloit Iron Works, Beloit, Wisconsin, passed away September 30 at Sandusky, Ohio, where he carried on his work for Beloit.

Mr. Denison was born at Connersville, Indiana, fifty-nine years ago. His first connection with the allied field was when he started with Connersville Blower Company. Later he worked for the Sandusky Foundry & Machine Company as sales engineer, and in 1929 he went with Beloit Iron Works. In 1942, Mr. Denison was chairman of the Allied Industrial Affiliates of the American Pulp and Paper Mill Superintendents Association.

Surviving are the widow, a son and three daughters.

◆

STUART J. SAKS

The Morris Machine Works, Baldwinsville, New York, has suffered the loss of its president, Stuart J. Saks, who passed away on September 5 at his summer home in Mexico Point, New York. He was 52 years of age.

Mr. Saks was born at Blossville, Pennsylvania. He lived in Syracuse as a youth and was graduated from Syracuse University. He served in World War I, and after the armistice he was

NOTE:
Baker has re-designed many of its trucks to meet industry's needs for increased production:
1. Longer continuous operation
2. Faster handling of material
3. Lower maintenance

● The same advantages which have been designed into these trucks to speed the production of war goods also apply to normal peacetime material handling. The model illustrated, designated as Type H-3, is of 6,000 lb. capacity.

Improvements include a new hydraulic lift system which provides efficient, positive control of hoisting and lowering, increased battery compartment permitting longer continuous operation, operator's guard integral with frame for greater strength and safety, and other features which provide increased efficiency and easier maintenance ...The new improved design is also available in 4,000 lb. capacity. (Type H-2.)

FOR INCREASED PRODUCTION AND EFFICIENCY

Larger battery box (32" x 39½") permits capacity to operate trucks continuously on longer shifts. Chamfered front top corner of battery compartment provides greater visibility for the driver. Sliding type battery cover is equipped with handles for faster servicing.

Controller, contactors, lift motor and pump are grouped together in a convenient control panel. Travel brake is easily adjusted by a single hex nut. Operator's guard built integral with frame for greater strength, provides handy compartment for carrying towing chain, pinch bar, or other tools

Easy steering results from proper design and antifriction bearings on king pins. All steering levers and rods are inside frame, protected against damage. Frame members are fabricated of heavy plate by hot riveting and arc welding.

Efficient hydraulic lift provides power lifting and gravity lowering, under absolute control at all times. 67" lift for two or three high tiering is standard.

Write for complete information

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Baker INDUSTRIAL TRUCKS

THREE FULLY PROVEN FEATURES

The post-war era may be years —or only a few short months away. The tides of battles and Nations are running faster and faster. Peace may fall upon us with a shattering suddenness. In the less hurried days of peace, the buying of machinery and equipment is sure to be upon a more keenly exacting basis. It is then that Layne's three great and fully proven features—Quality, Efficiency and Reliability, will reach new heights of appreciation.

Building Turbine Pumps and Well Water Systems requires skill, patience, knowledge and experience. In all of these attributes, Layne leads the world. That leadership is today, and has long been many times greater than that of any competitor. Such a record cannot be discounted.

Layne Turbine Pumps and Well Water Systems are built with the utmost precision and from the world's finest and most practical materials. They offer the highest in efficiency, longest years of life, lowest upkeep cost and the most reliable service.

For illustrated literature, address Layne & Bowler, Inc. General Offices, Memphis 8, Tennessee.

AFFILIATED COMPANIES: Layne-Arkansas Co., Stuttgart, Ark. * Layne-Atlantic Co., Norfolk, Va. * Layne-Central Co., Memphis, Tenn. * Layne-Northern Co., Mishawaka, Ind. * Layne-Louisiana Co., Lake Charles, La. * Louisiana Well Co., Monroe, La. * Layne-New York Co., New York City * Layne-Northwest Co., Milwaukee, Wis. * Layne-Ohio Co., Columbus, Ohio * Layne-Texas Co., Houston, Texas * Layne-Western Co., Kansas City, Mo. * Layne-Western Co. of Minnesota, Minneapolis, Minn. * International Water Supply Ltd., London, Ontario, Canada.

LAYNE

WELL WATER SYSTEMS

DEEP WELL PUMPS

Builders of Well Water Systems for every Municipal and Industrial Need

assistant provost marshal in Paris. Following the war, he was in newspaper work, but later turned to manufacturing. About three years ago, he joined the Morris Machine Works and a year later was made its president. He was prominent in civic interests and large associations, and recently had devoted much time to war activities.

Surviving are the widow, a daughter and a son.

◆

FREDERICK W. LODDING

The Lodding Engineering Works, Worcester, Massachusetts, suffered the loss of its president, Frederick W. Lodding, on September 16. Mr. Lodding was 63 years of age. He was born in Oslo, Norway where he received his technical training. His life has been spent in engineering; he formerly held a position as chief engineer of Rice, Barton, Corporation.

Surviving are the widow and a son, W. C. Lodding, who has been associated with his father in the business. He is now serving in the Armed Forces.

◆

CHARLES A. GARDNER

Charles A. Gardner, of Port Arthur, Ontario, timber contractor, recently passed away suddenly. He was 69 years of age. He became associated with the Whalen interests in the tie business when he arrived at Port Arthur, Ontario, as a young man. When the Provincial Paper, Limited, plant was erected, he was appointed woods superintendent, a position he held for fourteen years, following which he went into business for himself. In addition, he was associated with Charles Mellor in the timber business for a number of years.

Surviving are his widow, one son, and a daughter. Another son was killed in flying operations overseas with the R.C.A.F. in 1941.

◆

▶▶▶ The founder of the Continental Paper Company, Ridgefield Park, New Jersey, passed away in South Bend, Indiana, where he had gone on a business trip. He was *William J. Alford*, chairman of the board and former president of the company. He was 82 years of age. Surviving are the widow, a son and a daughter.

◆

FRANK S. MURCHIE

Frank S. Murchie, of Edmundston, New Brunswick, recently passed away at the age of 72. He was identified with the lumbering industry in that section until his superannuation a few years ago, first with James Murchie & Sons, and when that business was purchased by the Fraser Companies in 1911, he continued with the latter organization. He is survived by his widow, one daughter, and two sons, Major-General J. Carl Murchie, C.B.F., vice chief of the General Staff, Ottawa, and Ralph B. Murchie, assistant sulphite superintendent at the Edmundston, New Brunswick, mill of Fraser Companies, Limited.

◆

▶▶▶ Friends in the industry have just learned of the passing of *George W. Sterrett* at his home in Marseilles, Illinois, on July 31. Mr. Sterrett had been a member of the American Pulp and Paper Mill Superintendents Association, and was superintendent of the National Biscuit Company's paper mill for seven years before he retired several years ago on account of illness.

◆

▶▶▶ Well known in the paper industry because of his service during the depression as deputy administrator of the National Recovery Administration, in charge of its paper and pulp division, *Ward W. Pickard* recently passed away at his home in Nutley, New Jersey. He was 65 years of age. After the dissolution of N.R.A., Mr. Pickard continued in a private capacity as a consultant to paper industry associations. He leaves a widow and two sons.

◆

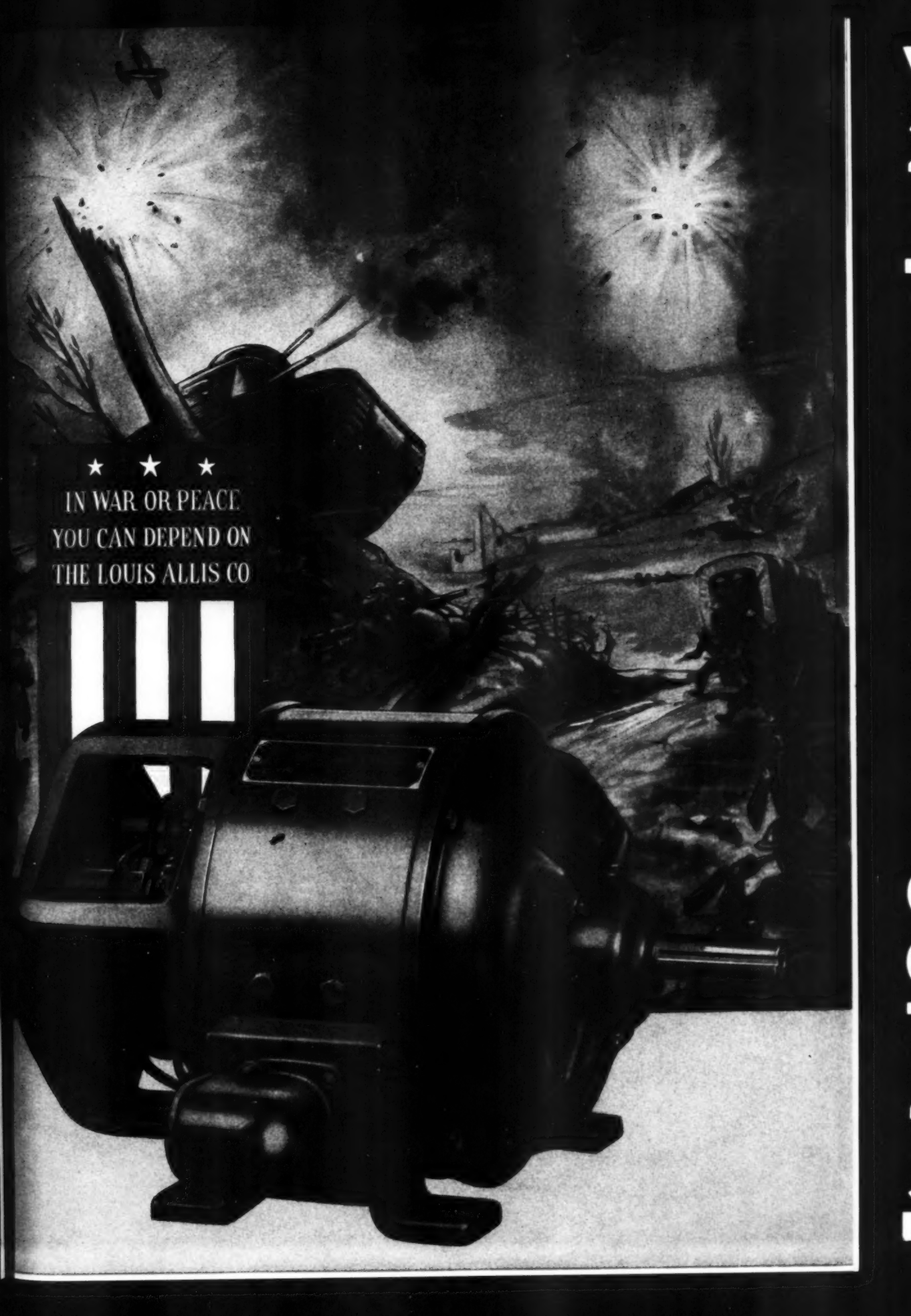
PATRICK L. O'CONNELL

At the end of the year 1942, Patrick L. O'Connell retired as foreman of the Smith Paper Company, Lee, Massachusetts. During his 59 years of service with the company he had never been late or absent. (Cf. P. I. and P. W., Jan., 1943, p. 1054).

On September 23, Mr. O'Connell passed away at his home in Lee. He began work in the Columbia mill of the company in 1883 at the age of 15. That mill was the first mill to make paper from wood pulp in 1883 under Alex McAlpine. Mr. O'Connell had charge of the rag room there for 35 years. During 40 years he rang the bell that called the mill employees to work.

◆

▶▶▶ During World War I, *E. Lawrence Fell* served as regional director of the paper and pulp division of the War Industries Board. Mr. Fell passed away September 26 in Philadelphia. He had formerly been president of the Franklin Printing Company, Philadelphia, from which position he had retired. He is survived by his widow and two daughters.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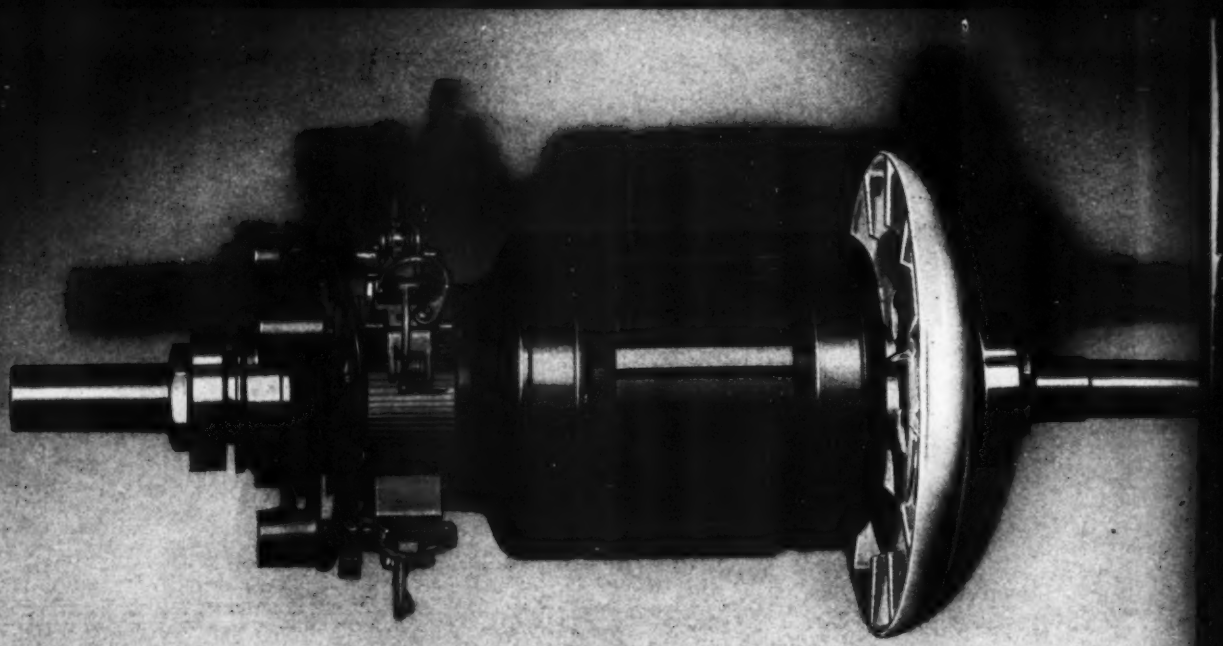
IN WAR OR PEACE
YOU CAN DEPEND ON
THE LOUIS ALLIS CO

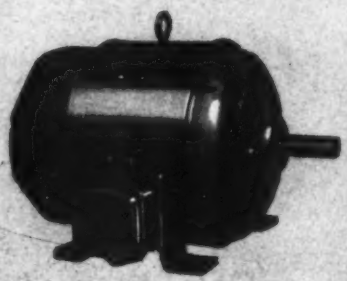


Smooth, Trouble-free COMMUTATION

One of the outstanding features of Louis Allis Direct Current motors is their smooth, dependable, trouble-free commutation.

Larger commutator with a greater number of better insulated commutator bars—precision built and machined — reduces to minimum voltage increments between bars.

Over size rigid brush holders flour-grained carbon brushes —double insulated holder studs — assure smooth sliding non-sparking commutation.



These rugged heavily reinforced cast-iron and steel constructed motors are built to cooly deliver a constant flow of dependable power on the toughest jobs.

Available in a wide range of both electrical and mechanical modifications — a size and type for every industrial requirement.

On your very next D.C. motor requirement specify by name — LOUIS ALLIS D.C. MOTOR — it's the motor to depend upon!

A copy of descriptive bulletin No. 507-C will be sent upon request.

THE LOUIS ALLIS CO., MILWAUKEE 7, WIS.

Thirty-second Annual Safety Congress

Organized to Speed Victory

▸▸▸ WITH EACH OF ITS SESSIONS tuned to the theme "Stop Accidents—Speed Victory," the thirty-second National Safety Congress met in Chicago October 5, 6, and 7 to consider safe practices to reduce the toll on the home front and thus save manpower for warpower. Casualties to American workers through accidents since Pearl Harbor are 80,000 dead and 7,000,000 injured, on and off the job. Accidents delay Victory, and the battle on the home front must be won without heavy casualties.

In 1942, the Congress was cut from the former five days to three days. Again this year, the schedule was streamlined to cover only three days. The meeting places assigned to the meetings were the same as last year: Congress headquarters were in the Sherman Hotel; with the various Sections distributed among the Sherman, the LaSalle, and the Morrison Hotels.

Annual Meeting of National Safety Council

The Annual Meeting of Members of the National Safety Council opened the Congress on Tuesday morning. The Grand Ballroom, where this meeting was held, was hung with patriotic bunting, the Stars and Stripes and flags of Allied Nations. There was a program of stirring military music at the close of which the organ pealed the National Anthem.

Col. John Stilwell, president of the National Safety Council, opened the meeting with his annual report to the members. In the beginning of his address, Colonel Stilwell stated that if safety workers had the same support and co-operation accorded many other movements, there would be no question about cutting accident losses to the vanishing point. He further stated that he believed that to be the ultimate goal of the safety movement.

The Council's president reviewed the growth of the organization from 1940, taking up first, the organization of the Council's Board of Trustees; then the proclamation by President Roosevelt in 1941 asking the Council to mobilize the safety forces of the country in a campaign against accidents. The nation-wide movement conducted by the War Production Fund to Conserve Manpower was highlighted by Colonel Stilwell, and some interesting and informative facts revealed. He reported that the fund so raised amounted to approximately $2,500,000. In addition to the amount so raised, the speaker stated that the movement brought about the participation in the safety movement of 1,076 leading representatives of all fields of business and industry in all sections of the country who served on the committees.

Speaking of the growth of the Council during the past four years, Colonel Stilwell stated that four years ago the Council had 5,160 memberships. Today it has 6,013. Four years ago the membership cancellation rate was 6.7 per cent; today it is 4.9 per cent.

Colonel Stilwell's report was followed by the report of the executive vice president, Ned H. Dearborn. Mr. Dearborn stated that "The United States at war has become the most safety-minded nation in the world and the result has been more vigorous, efficient prosecution of the War on the homefront at great savings of lives, money, and time. He outlined the different branches of safety work in which the Council has co-operated with the Government. He said that in co-operation with the U. S. Department of Labor, the Council had produced a series of "safety in foremanship" films for use in training safety personnel in industry and elsewhere. He also stated that in co-operation with the War Department, the War Production Board, and safety equipment manufacturers, the Council had developed a program for the conservation of personal protective equipment used in industry.

"Whether in wartime or peacetime, safety work can be effective only if directed against fundamental causes of accidents," said Mr. Dearborn.

The principal address at the Annual Meeting was delivered by C. C. Carlton, vice president and secretary of the Motor Wheel Corporation, Lansing, Michigan; president, Automotive Parts and Equipment Manufacturers Association; vice chairman, Automotive Safety Foundation. Mr. Carlton's subject "Stop Accidents—Speed Victory" set the theme of the Congress. He referred to American business and industry as the Arsenal of Democracy, and he stated that it is living up to its reputation in a magnificent way. But, in the face of a remarkable record, he pointed out that nothing should be left undone, so that after the war all may feel the fine work done helped bring Victory to a successful and speedy conclusion.

The speaker referred to the problems confronting industries engaged in war production, and he emphasized that the problem of manpower is one that is increasing with the duration of the war. "Industry has made great strides in conserving manpower through reducing the rate of injury due to on-the-job accidents," said Mr. Carlton. "In spite of the employment of millions of men and women who never before worked in factories of business; in spite of an increase from 46 million employed in 1940 to a total of 64 million employed in our country today, occupational deaths in the first seven months of 1943 decreased by 400. That's a record of which to be very proud. It's a tribute to the industrial and business safety workers of America. That's speeding Victory by modern safety methods."

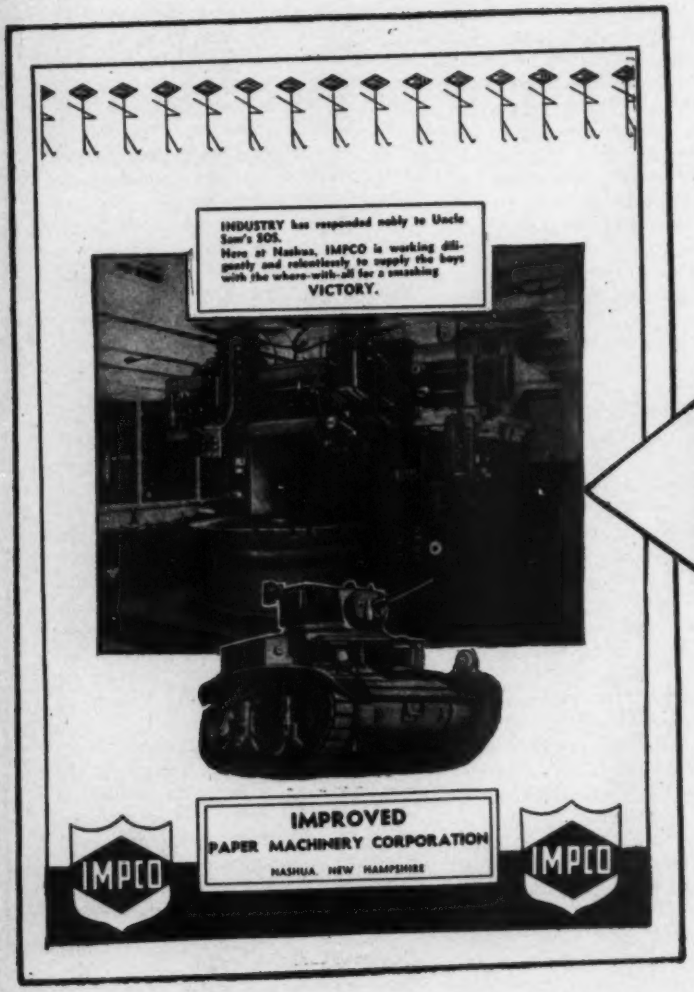
The speaker stated that although on-the-job accidents had decreased, the great problem confronting industry is off-the-job accidents. This problem, of course, covers almost every type of accidents aside from industrial accidents, and it requires organized effort in every phase of accident prevention.

Council Re-elects Col. John Stilwell

At the Wednesday evening banquet, it was announced that Col. John Stilwell had been re-elected to serve the National Safety Council as president for the coming year. The banquet was the military accent of the Congress—twelve generals were among the notables present. The headline speaker of the evening was Robert A. Lovett, Assistant Secretary of War for Air, who spoke on the subject "Safety Builds War Power."

(Continued on page 754)

IN WAR A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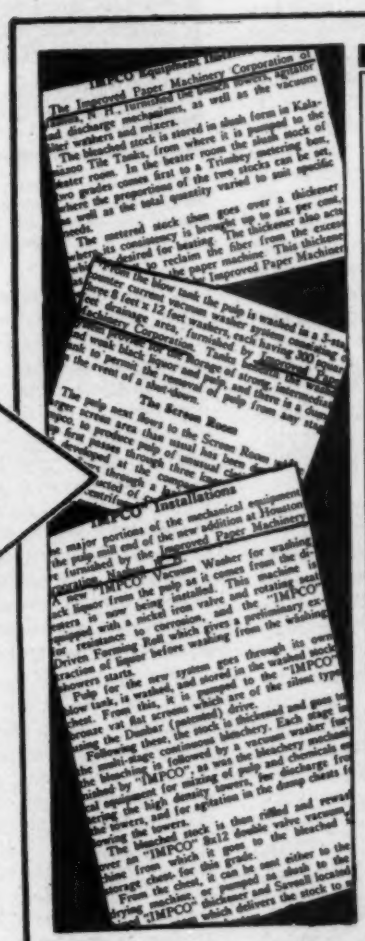

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SAFETY CONGRESS
Paper and Pulp Section

The sessions of the Paper and Pulp Section were held Tuesday, Wednesday, and Thursday afternoons.

At the opening session on Tuesday afternoon, General Chairman Roland W. Richardson, opened the session with a Progress Report of the past year. The Chairman said in part:

Chairman Richardson said in part:

"The Section has been extremely active during the past year. Committee chairmen reported progress in their respective activities. Eleven **News Letters,** edited by Julius Draper, have been full of interesting and informative material. The **Data Sheet Committee,** under the leadership of E. F. Troop, has submitted two sheets; one, an ingenious apparatus for supporting rolls of pulp or other paper to be unwound and fed into a beater; the other, a safe method of securing various size rolls of paper on skids so they won't fall off. They are now in process of publication by the National Safety Council. The **Engineering-Safe Practices Committee** majored in the preparation of a Safe Practice pamphlet for the Pulpwood Logging Industry, in which the **Logging Operations Committee** under the leadership of J. E. Cantin very greatly cooperated.

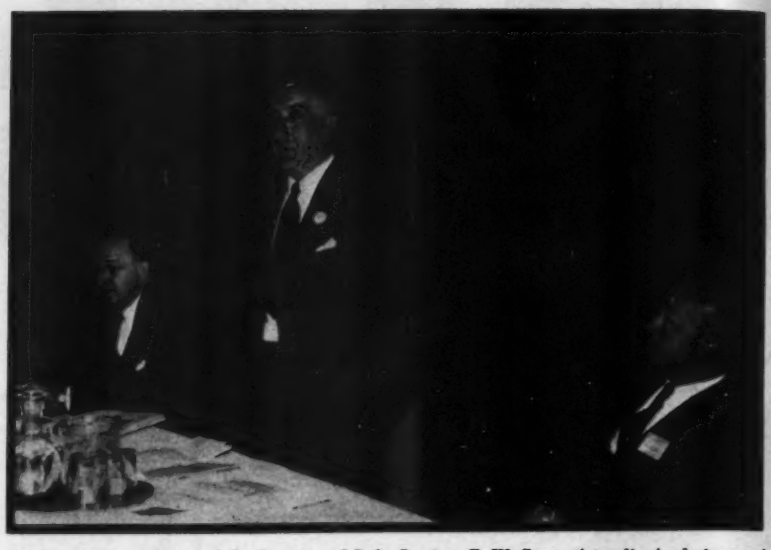
"The Safety Instruction Card Committee, headed by R. W. Croucher, has been working on the completion of three cards; "Handling and Trucking of Skid Paper," "Safe Handling of Acids" and "Feeding Beaters."

"George Gibb, of the **Visual Education Committee,** has submitted during the past year ten photographs with descriptive matter to be incorporated in safety posters. A recommendation was made that this committee produce a sound-slide film portraying safe practices in the paper industry. There have been many requests for such a film."

J. Fred Berry, chairman of the **Membership Committee,** reported an increase of thirty members of the Paper and Pulp Section during the past year.

F. W. Braun, vice president and chief engineer of Employers Mutuals, Wausau, Wisconsin, presented as Chairman of the **Statistics Committee** of the Paper and Pulp Section, a review of 1942-43 Paper and Pulp industry accident experience.

The upward trend in the injury rates of the Paper and Pulp Industry since 1938 continued during 1942, Mr. Braun reported. The increase in frequency rate from 1941 and 13 per cent and the increase in severity was 6 per cent. Control over the accident experience has been less effective than in some of the other industries. Only a few industries had steadily rising injury rates during the past five years. The changes in rates during the past year were also generally unfavorable in comparison with results in other industries. The increase of 13 per cent in frequency compares with an average decrease of 2 per cent for American industry as a whole and the increase of 6 per cent in severity was twice the general rise in this rate. Indications point to still higher 1943 rates.



At the opening session of the Paper and Pulp Section, F. W. Braun (standing), chairman of the Statistics Committee, reviewed the Section's accident experience for the past year. Seated are Roland W. Richardson (right), general chairman of the Section; and J. Fred Berry (left), vice chairman in charge of membership.

Worse records in 1942 were the rule in all branches of the industry. Both injury rates soared about 63 per cent on the average in pulp mills. Remanufacturing plants had considerably worse experience in comparison with 1941 than did paper mills. The only mills which were able to hold their own under wartime employment and production conditions were book and specialty mills which had an average increase of one per cent in frequency and decreased severity 26 per cent.

The loss of time from work on account of accidents is more important to the paper and pulp industry than to many other industries because pay rates are higher than the average. Paper and pulp ranked 25th out of 31 major industries in frequency last year and had about the same standing in severity. The average loss of time for temporary total disabilities — the least serious of lost time cases—is almost three weeks. The industry has one permanent partial disability for each 22 lost time cases—more than average—and the permanent disabilities are also of more than average severity. The large additional loss of time due to these injuries is another important reason for still greater safety effort.

What is to be done? Mr. Braun could see no reason to believe that the causes of accidents will differ greatly from the causes of past injuries. It is essential, of course, to know the principal unsafe practices and unsafe conditions before a logical plan of attack can be devised.

A great deal of thought, talk and writing has been done about the importance of women's apparel in preventing accidents. We all recognize that safe clothing is essential but to believe that a large proportion of the accidents involving women can be prevented by proper clothing is contrary to the fact. The plain truth is that teaching a female machine operator to stop her machine before making adjustments near moving parts, or performing some other job under such circumstances, will prove far more effective in reducing serious injuries to women.

Accident problems, of course, carry from one mill to another. The analysis in various plants shows that same causes repeatedly result in injuries. The principal unsafe practices and conditions should be determined—made known to the supervisors so that they can use their time most effectively—emphasized at safety meetings—used as the basis for the selection of posters —and used in other ways.

Last year, Mr. Braun had outlined a simple method of analyzing accidents, and forms are still available

Ready to stand between your plant and a bunch of saboteurs

Santobrite, Monsanto's highly effective fungicide and bactericide, combats . . . and renders inactive . . . microorganisms that sabotage your war-busy mill by disrupting production, wasting materials and lowering the efficiency of equipment. It puts an end to the causes of slime spots and breaks . . . blinded wires and plugged felts . . . dirty stock . . . clogged water lines . . . rotted felts . . . and many other enemies of good mill operation.

Santobrite is chemically stable, non-corrosive to metals, non-volatile, practically odorless and, when properly handled, its use is no hazard to health of mill operators nor those who use the mill's products.

The use of 0.1 to 1 pound of Santobrite per ton of pulp or paper produced, gives positive protection. The amount used depends upon the extent to which your water system is closed, the characteristics of your stock and the quality of your water supply. No expensive equipment is needed in the application of Santobrite, which comes either as powder or briquettes. Santobrite treatment costs from 1½ to 18 cents per ton of paper or pulp.

Limited amounts of Santobrite are available on priority for continuous anti-slime treatment.

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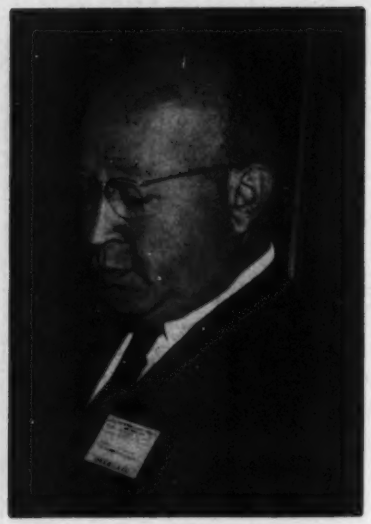


Roland W. Richardson, general chairman, presided at the opening of the Paper and Pulp Section.

from National Safety Council headquarters. Copies of the Accident Facts Memos on the principal circumstances and causes of accidents in paper mills are still available from headquarters.

Now is a good time, said Mr. Braun, to make an accident analysis of 1943 accidents, so that you will know positively — without any guesswork — whether your future efforts will be directed at the biggest source of injuries. It seems to him that this is one of the most effective approaches that can be made to reverse the upward trend in injury rates in the industry.

Management's Responsibility for Safety

The formal address of the first session was given by George J. Pecaro, plant manager of the Flintkote Company, Meridian, Mississippi. The subject of Mr. Pecaro's talk was "Discharging Management's Responsibility for Safety." He was introduced by H. P. Heubner, insurance manager of the Flintkote Company.

Mr. Pecaro's talk was full of practical ideas born of the experience of a successful executive. He placed the responsibility for accidents strictly on the shoulders of management, stating that the obligation of management to its employees is one which brooks no mistakes. The important thing, said Mr. Pecaro, is that management recognize the fact that safety is a production function which must be approached with the same attitude and organization with which production problems are solved. Select, check and care for your men and machines for safety as for production, and results will be forthcoming.

(Mr. Pecaro's paper will be published in the November issue of this magazine.)

New Officers

At the close of the opening session, A. Scott Dowd, chairman of the Nominating Committee, read the slate of officers that had been selected to serve the Section for the coming year. These officers and committeemen nominated were unanimously elected.

General Chairman—J. Fred Berry, Alton Box Board Co., Alton, Illinois.

Vice Chairman in Charge of Membership—L. R. Simpson, The Brown Paper Mill Co., Inc., Monroe, La.

Secretary—E. A. Page, Kimberly Clark Corporation, Neenah, Wis.

Program Committee—E. A. Page (Chairman), Kimberly Clark Corporation, Neenah, Wis.; Ernest Augustus, The Mead Corp., Chillicothe, Ohio; W. G. Etter, River Raisin Paper Co., Monroe, Mich.; H. P. Huebner, The Flintkote Co., New York, N. Y.; L. C. Smith, Thilmany Pulp & Paper Co., Kaukana, Wis.

News Letter Editor—Julius A. Draper, Consolidated Paper Corp., Ltd., Grand Meré, P. Q., Canada.

Contest Committee—A. Scott Dowd (Chairman), Fritz Publications, Inc., Chicago; B. D. Rogers, Bird & Son, Inc., East Walpole, Mass.; W. J. Melville, Nekoosa-Edwards Paper Co., Port Edwards, Wis.

Data Sheet Committee—A. J. Basile (Chairman), Lawrence Paper Co., Lawrence, Kans.; B. K. Wickwire, Longview Fibre Co., Longview, Wash.; H. H. Yoder, Gulf States Paper Corp., Tuscaloosa, Ala.; J. J. Hastings, Port Huron Sulphite & Paper Co., Port Huron, Mich.; James M. McGivney, Brown Co., Berlin, N. H.

Engineering—Safe Practices Committee—R. W. Croucher (Chairman),

George J. Pecaro, plant manager, The Flintkote Co., Meridian, Miss., was the principal speaker at the opening session of the Paper and Pulp Section.

J. Fred Berry, newly elected general chairman of the Section.

Minnesota & Ontario Paper Co., International Falls, Minn.; E. G. Amos, American Paper & Pulp Ass'n, New York, N. Y.; M. W. Dundore, Beloit Iron Works, Beloit, Wis.; E. C. Jacobs, American Mutual Liability Insurance Company, New York, N. Y.; B. J. McCloskey, Hoberg Paper Mills, Green Bay, Wis.; G. C. Kerr, Quebec North Shore Paper Co., Baie Comeau, Que., Canada; O. R. Hartwig, Crown Zellerbach Corp., Portland, Oregon.

Health Committee—Dr. Louis H. Frechtling (Chairman), Champion Paper & Fibre Co., Hamilton, Ohio; Mrs. Lillian Brewer, Oswego Falls Corp., Fulton, N. Y.; Dr. James D. Stark, Hammermill Paper Co., Erie, Pa.

Statistics Committee Chairman—Fred W. Braun, Employers Mutuals, Wausau, Wis.

Logging Operations Representative—J. E. Cantin, Quebec North Shore Paper Co., Baie Comeau, Quebec, Canada.

Paper Products Plants Representative—A. J. Tuccinardi, The Ohio Boxboard Co., Rittman, Ohio.

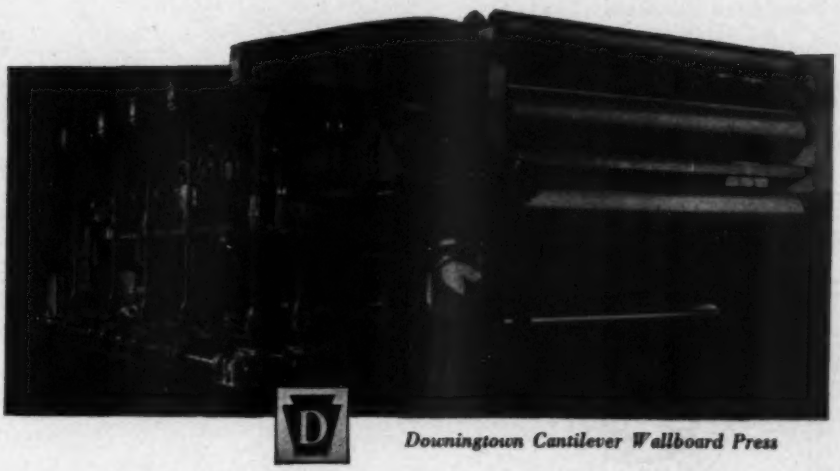
Safety Instruction Card Committee—E. F. Throop (Chairman), P. H. Glatfelter Co., Spring Grove, Pa.; G. J. Bienvenu, Gaylord Container Corp., Bogalusa, La.; A. S. Cook, Quebec Pulp & Paper Safety Ass'n, Quebec, Canada; Claude J. Urevig, Scott Paper Co., Chester, Pa.; John C. Lavin, St. Croix Paper Co., Woodland, Maine; C. J. Munk, Racquette River Paper Co., Potsdam, N. Y.

Visual Education Committee—George Gibb (Chairman), Canadian International Paper Co., Gatineau, Que., Canada; R. A. Day, A. P. W. Paper Co., Albany, N. Y.; J. R. Latter, Anglo-Canadian Pulp & Paper Mills,

YESTERDAY—A SOLUTION TO AN ENGINEERING PROBLEM

Today - a valuable war production aid

Monel-covered primary press and breast rolls need no maintenance in 4 years of operation



Downingtown Cantilever Wallboard Press

"PRESSURE WELDED" Monel covers on paper machine rolls, developed by engineers before the war, are helping speed war production *today*.

For example, consider the record of the rolls on the world's largest cantilever type press.

Built in 1939 by the Downingtown Manufacturing Co., Downingtown, Pa., the press can produce wallboard 13 feet wide at a rate of three million square feet a week.

Among many innovations was the use of Monel covers on the primary press and breast rolls. They have .109" thick Monel sheet covers applied by the Youngstown Welding & Engineering Company's "pressure welding" method over steel cores.

Sturdy and rigid, yet light in weight, the Downingtown designed rolls have served four years without requiring regrinding or other maintenance. They have held *smooth clean surfaces, with complete freedom from pitting, corrosion and wear* despite the added burden of production placed on them since the war began.

Today, all new Monel production goes for essential war needs. Tomorrow, this valuable alloy will be available for peacetime service based on today's findings. A record of Monel-covered rolls in paper making equipment is given in the booklet, "Performance of Monel-Covered Rolls", sent to you on request.

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Bull Session

An innovation in the Section's program was the Paper and Pulp evening "bull session" held in the Chicago Room of the La Salle Hotel on Tuesday evening. The session was a get-together dinner for all to become better acquainted with each other and to discuss their individual safety problems. It proved to be highly successful with a recommendation that it be held again next year.

Paper and Paper Products Session

Presiding at the session devoted to Paper and Paper Products on Wednesday afternoon was A. J. Basile, safety director, Lawrence Paper Company, Lawrence, Kansas. In his opening remarks, Mr. Basile spoke of the increased responsibilities put upon safety men under present conditions. The training of new men has created an added load of responsibility, with the result that in some places important

safety matters necessarily have been left undone. Therefore, methods of training must be improved and accelerated. The subject of the discussion at this session was "Paper Converting Safety Problems." The participants were:

Discussion Leader—H. H. Aderhold, safety director, Marathon Paper Mills Co., Menasha, Wis.

Cliff E. Burton, industrial relations department, Kimberly-Clark Corp., Neenah, Wis.

B. J. McClosky, personnel director, Hoberg Paper Mills, Green Bay, Wis.

Russell F. Stephens, manager insurance department, *Chicago Tribune*, Chicago.

A. J. Tuccinardi, director of personnel, The Ohio Boxboard Co., Rittman, Ohio.

In opening the panel, Mr. Aderhold stated that 23 questions had been obtained in response to a questionnaire sent to paper products plants and that as many of these questions as possible would be covered in the discussion.

Each of the questions presented drew a generous response. Many helpful ideas were exchanged, much of which had to do with the conditions industry has to cope with at present.

The question "What are the best steps to take to make the new employee safety-minded?" drew a general discussion which majored on methods used by many of the mills in dealing with young employees. These young people must have special safety education, and about the first step in that training is to teach them that safety *is* important. One delegate told of using a 17-year-old badge for these young workers. This pointed out the new employee to seasoned workers and foremen, so that all would realize that these workers should be given safe duties. Another representative stated that his company enforces the safety rules very rigidly with the 17-year-olds and that they have had relatively few accidents among them.

In educating the new employee, one safety man stated they had had very good response to educational films on safety subjects. The results were especially good if followed by a discussion.

Logging Session

A group of the delegates especially interested in pulpwood logging operations, met under the direction of J. E. Cantin, safety director, Quebec North Shore Paper Company, Baie Comeau, Quebec, Canada.

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The accident rates of National Safety Council members average only 50 to 60 per cent of the rates of non-members in comparable industries.

Because of this you can readily visualize the savings and other benefits which can accrue to your Company from a conscientious use of the Council's Accident Prevention Services.

For details, just address a request on your Company's letterhead to:

Paper and Pulp Section
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You will also receive a complimentary copy of our Accident Facts Memo. No. PP-1, "Hand Tool Accidents in the Paper Industry."

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The lead screws used in the gear generating machines which produce De Laval Helical Gears for transmitting the power of high-speed steam turbines and also in the thread milling machines on which the worms for De Laval worm gears are made must be extremely accurate, since tolerances are measured in ten-thousandths of an inch.

Lead screws of the precision required not being generally available, it has from the beginning been the practice of the De Laval Steam Turbine Company to cut its own lead screws. The precision lead screw cutting lathe here shown, after exhaustive checking and the incorporation of certain refinements by our engineers and shop specialists, produces lead screws of the necessary accuracy.

The machine's own carefully corrected original or master lead screw is protected and carefully preserved. A duplicate which has been cut from the original and can readily be replaced when worn or injured is used in regular operation.

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De Laval STEAM TURBINE CO.
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MANUFACTURERS OF TURBINES... STEAM, HYDRAULIC; PUMPS... CENTRIFUGAL, CLOGLESS, ROTARY DISPLACEMENT, MOTOR-MOUNTED, MIXED-FLOW, PROPELLER; PRIMING SYSTEMS; CENTRIFUGAL BLOWERS and COMPRESSORS; GEARS... WORM, HELICAL, and FLEXIBLE COUPLINGS

W. L. Bennett, president of the Quebec Pulp and Paper Safety Association, Inc., spoke on the subject of "Safety in the Pulpwood Logging Industry." He urged that manufacturers in Canada and the United States keep ahead of social reforms relating to accident prevention and workmen's compensation laws.

"We are facing a future of many social reforms," Mr. Bennett said, "and some of them will be foolish and costly both to the employer and the employee. Manufacturers both in Canada and the United States, should look the matter of accident prevention squarely in the face, estimate the known and hidden cost, and actually promote some system to take care of this evil before some legislation is adopted which may be very impracticable."

"Fair compensation rates should not frighten any industry, for industry has the answer right in its own hands in accident prevention. And there is no mystery about accident prevention. To be sure, there are many systems used to educate employees to be careful, but in the final analysis if the office of the president or general manager actually takes an interest in safety, the number of accidents will be reduced so greatly that the cost will not be a cause of worry."

Mr. Bennett reported that the system of accident prevention used in the Quebec Association includes education of employees and employers, the compilation of accident information and adequate compensation for injured workers.

E. A. Page, industrial relations department, Kimberly Clark Corporation, presented notes and material for a proposed Safe Practice pamphlet on "Safety in Pulpwood Logging Operations." These were discussed at length.

The discussion ended with the passing of three resolutions to be presented to the Paper and Pulp Section: *First*—that mimeographed copies of Mr. Bennett's paper be sent to all members of the Section having woods departments; *Second*—that inasmuch as logging includes the cutting and handling of all types of timber, these recommendations for a code or a Safe Practice pamphlet should be presented to all interested in such operations for their study and recommendations, and that a committee composed of pulpwood logging men be named by the Section's Executive Committee to study further what has been written; and *Third*—that this logging committee receive the backing of the Paper and Pulp Section in its request of the National Safety Council for a Logging Section to include all logging interests.

Representatives from mills that were awarded group trophies and certificates by the National Safety Council: (L to R) Front Row—Ernest Dutcher, Pioneer Division, The Flintkote Co., Los Angeles, Calif.; Carl R. Kihn, Champion Paper & Fibre Co., Hamilton, Ohio; Miss Rose Mory, Combined Locks Paper Co., Combined Locks, Wis.; Lester Lind, Alton Box Board Co., Alton, Ill.; E. F. Troop, P. H. Glatfelter Co. Back row—Joseph Scherer, Thilmany Pulp & Paper Co.; B. J. McClosky, Hoberg Paper Mills, Green Bay, Wis.; Walter E. Strong, Marathon Paper Mills Co.; Karl Kiedaisch, South West Box Co., Sand Springs, Okla.; and J. A. Long, Bay West Paper Co., Green Bay, Wis.

Presentation Session

In line with wartime conservation, the Paper and Pulp Section, as well as the other sections of the National Safety Council, did not hold luncheon meetings this year. The presentation of trophies which formerly has been made at the luncheon meeting, was held as the main part of the Thursday afternoon session.

Prior to the presentation ceremonies, resolutions from the Logging Session (mentioned herein under that session) were presented and discussed with the result that Resolution No. 2 which recommended appointment of a committee composed of pulpwood logging men to study the matter as proposed at the Logging Session will be referred to the Executive Committee of the Paper and Pulp Section. Resolution No. 1 was approved, and copies of Mr. Bennett's paper will be mimeographed and mailed to all members of the Section having woods departments.

Chairman Roland W. Richardson who presided at the presentation session then called on A. Scott Dowd, chairman of the Contest Committee to give the final report of the 1942-1943 Paper Industry Safety Contest.

Data on the 1942-1943 Paper Industry Safety Contest

Participation in the Annual Safety Contests of the Paper and Pulp Section, National Safety Council, reached its highest record in the number of units that took part in the 1942-1943 Contest, which ended June 30, 1943.

There were 194 contestants in this 17th Annual Competition, comprising 160 paper and pulp mill units and 34 paper and board Remanufacturing plants. The number of paper and pulp mill units was equal to that registered in the previous Contest, the largest number of contestants being in Group *B*. The over-all increase consisted of a record enrollment in Division II.

Frequency rates for all contestants —by which scores are ranked, averaged 17.77, the highest it has been for eight years. Paper and pulp mills had lower rates than those of Remanufacturing plants. Group *A* had the lowest average frequency rate of 15.05.

Comparing the records of identical contestants this year with last, there were increases in each group, amounting to nine and eleven per cent, except those of Group *C* and Group *D*. The latter reduced its previous experience six per cent.

There were seven perfect scores; four were in Group *D*, and three were in the Remanufacturing Division. The Ashland Division of the Marathon Paper Mills worked the most hours without a disabling injury in the Paper and Pulp Mill Division. The Thilmany Pulp and Paper Company, Bag Mill, Kaukana, Wisconsin, had the best record in the Remanufacturing Division.

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- **Improves Moisture Resistance**
- **Eliminates Undesirable Mottling**

Manufacturers of K-ration Boxes and other moisture-resistant packages find METHOCEL an important aid in reducing penetration of hot paraffin. This results in a substantial saving of paraffin coatings. It also prevents undesirable mottling caused by nonuniform pickup of paraffin and increases moisture resistance of carton. Thus, packages are improved in appearance.

METHOCEL possesses unusual film forming properties—sizings and coatings are extremely tough and flexible. Resistance to heat and "spoilage," and freedom from color, odor and taste, are of great importance to the paper industry.

THE DOW CHEMICAL COMPANY
MIDLAND, MICHIGAN
New York, St. Louis, Chicago, Houston, San Francisco, Los Angeles, Seattle

METHOCEL

THE UNIFORM SIZING MATERIAL

DOW
CHEMICALS INDISPENSABLE
TO INDUSTRY AND VICTORY

Mrs. Annie C. L. Fritz presents the Edward Benton Fritz Memorial Trophy to Ernest Dutcher, representing the Pioneer Division of The Flintkote Co., Los Angeles, Calif., winner of the major award.

Three of the perfect scores have continued for two or more years as follows:

GROUP D

Ashland Division of the Marathon Paper Mills Company, Ashland, Wisconsin—has made two continuous annual perfect scores.

DIVISION II (Remanufacturing)

Thilmany Pulp and Paper Company, Bag Mill, Kaukana, Wisconsin—has made two continuous annual perfect scores.

Bay West Paper Company, Green Bay, Wisconsin—has achieved six annual continuous perfect scores.

A wider spread of specific recognitions has been generously given by the National Safety Council in their Award of Certificates of Achievement to contestants as provided in Rule 16 (d). This rule in the 1942-1943 Contest states that "On the basis of the final report of the Contest, the National Safety Council will award at the 1943 National Safety Congress Certificates of Achievement to units having frequency rates below their group averages, and also showing reductions in rates by comparison with rates in the previous contest." Winners of trophies and other certificates in this Contest are ineligible for this Award. Thirty-four contesting units were winners of these Reduction Award Certificates. Their names and records are listed on pages 2 and 3 of the Final Reports that have just been given to you.

A brief summary of accident facts for the 1942-1943 Contest reveals that the average frequency rate of identical mill contestants in this contest was nine per cent higher than it was in the previous contest. The average frequency rate for all divisions in the annual Paper Industry Contests has steadily increased in each of the past four years, from the rate 12.81 in 1939; 13.35 in 1940; 14.32 in 1941; 16.45 in 1942 to 17.77 in 1943.

The average frequency rate of identical units in *all industries* for the year 1942 was two per cent less than it was for the year 1941. Thus it will be seen that more concentrated effort in the saving of man-power is necessary in the Paper and Pulp Industry.

The rules for the 1942-1943 Contests are practically the same as those of last year. They have been rephrased and simplified to conform to standard rules adopted by the National Safety Council for all of its eight Section Safety Contests.

All participants in the Paper Industry Contest which ended June, 1943, have been enrolled in the present one.

Contest Winners

Trophies

Group A

The Flintkote Co. (Pioneer Div.), Los Angeles, Calif.

Group B

Hoberg Paper Mills, Inc. (Hoberg Div.), Green Bay, Wis.

Group C

Price Brothers & Co., Ltd., Jonquiere, Quebec.

Group D

Marathon Paper Mills Co., Ashland, Wis.

American Writing Paper Corp. (Mt. Tom Div.), Holyoke, Mass.

Alton Box Board Co., Carlyle, Ill.

International Paper Co., Riley, Maine.

Division II (Remanufacturing)

Thilmany Pulp & Paper Co. (Bag Mill), Kaukauna, Wis.

South West Box Co., Sand Springs, Okla.

Bay West Paper Co., Green Bay, Wis.

Certificates

Group A

Price Brothers & Co., Ltd., Riverbend, Quebec.

Champion Paper & Fibre Co., Hamilton, Ohio.

Group B

P. H. Glatfelter Co., Spring Grove, Pa.

Combined Locks Paper Co., Combined Locks, Wis.

Group C

Escanaba Paper Co., Escanaba, Mich.

Hoberg Paper Mills, Inc. (Fibre Div.), Green Bay, Wis.

Certificate of Achievement

Group A

The Flintkote Co., New Orleans, La.

Anglo-Newfoundland Development Co., Ltd., Grand Falls, Newfoundland.

The Gardner-Richardson Co., Lockland, Ohio.

Thilmany Pulp & Paper Co., Upper Mill, Kaukauna, Wis.

The Mead Corp., Kingsport Div.

Mersey Paper Co., Ltd., Liverpool, N. S.

Rhinelander Paper Co., Rhinelander, Wis.

International Paper Co., Palmer, N. Y.

Group B

Laurentide Division-Consolidated Paper Corp., Ltd.

The Flintkote Co., Meridian, Miss.

West Virginia Pulp & Paper Co., Williamburg Mill.

Belgo Division-Consolidated Paper Corp., Ltd.

Kimberly-Clark Corp., Badger-Globe Mill.

Nekoosa-Edwards Paper Co., Port Edwards, Wis.

Group C

American Writing Paper Corp., Riverside Division.

American Writing Paper Corp., Linden Division.

Central Fibre Products Co., Quincy, Ill.

How to Get Better Process Water

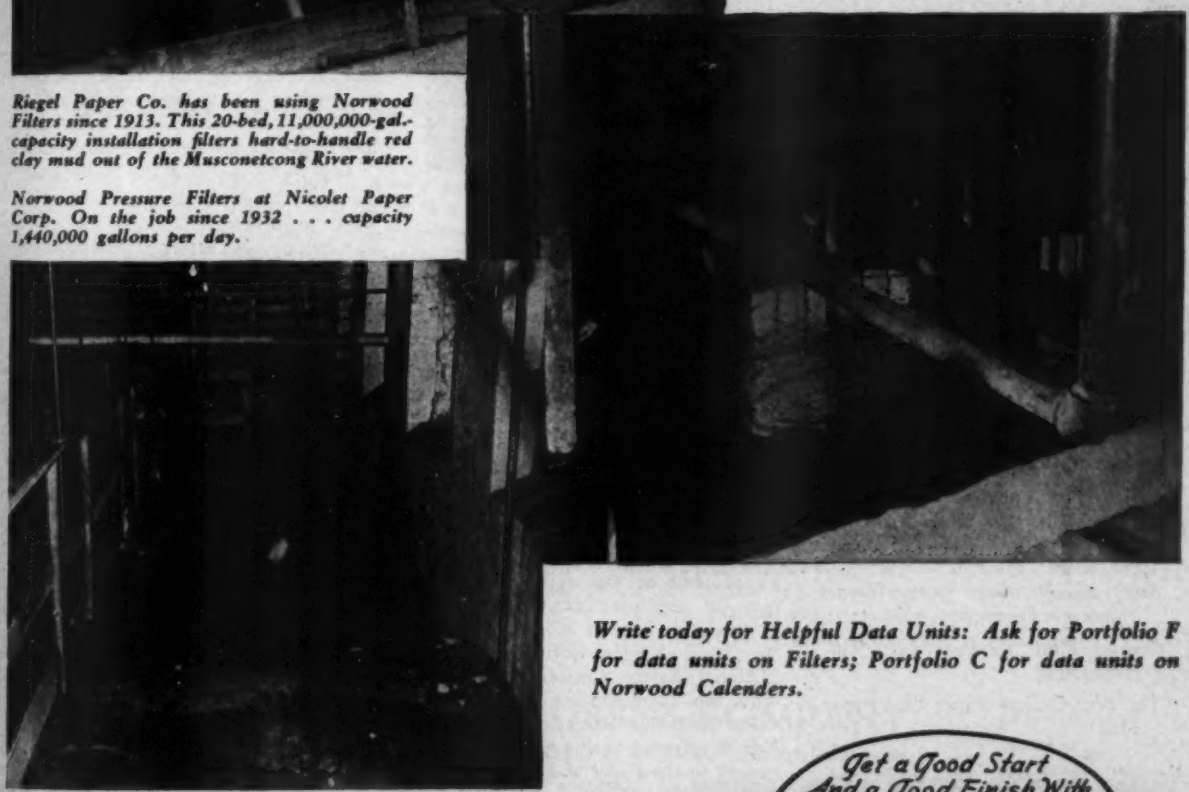
NORWOOD FILTERS Will Give You BETTER WATER And STAND UP For YEARS

Here are three of the hundreds of Norwood Filters that are giving paper mill men better process water . . . so they can make better paper, free from spots and specks. Norwood Filters will give you better water and stand up for years . . . for they are designed and built to "stand the gaff" by an organization with half a century of experience helping paper mill men lick their water problems.

Strathmore Paper Co., Woronoco, has been using Norwood Filters since 1913. Partial view of 10-bed installation with capacity of 3,000,000 gallons per day.

Riegel Paper Co. has been using Norwood Filters since 1913. This 20-bed, 11,000,000-gal.-capacity installation filters hard-to-handle red clay mud out of the Musconetcong River water.

Norwood Pressure Filters at Nicolet Paper Corp. On the job since 1932 . . . capacity 1,440,000 gallons per day.



Write today for Helpful Data Units: Ask for Portfolio F for data units on Filters; Portfolio C for data units on Norwood Calenders.

Get a Good Start And a Good Finish With

NORWOOD

WATER FILTERS AND PAPER FINISHING MACHINERY

The Norwood Engineering Company

16 No. Maple St. Florence, Mass.

EDWARD BENTON FRITZ
MEMORIAL TROPHY
Founder of
The Paper Industry and Paper World Magazine of Chicago and a
pioneer of safety in pulp and paper mills of North America
MAJOR SAFETY AWARD
won by
THE FLINTKOTE COMPANY
Pioneer Division – Los Angeles, California
for best safety achievement among 160 mill members of the
NATIONAL SAFETY COUNCIL
in the
Paper Industry Annual Safety Contest
July 1, 1942 — June 30, 1943

Container Corp. of America, Coated Board Division, Chicago, Ill.

Strathmore Paper Co., West Springfield Mills.

The Mead Corp., Sylva Division.

Container Corp. of America, Fernandina, Fla.

Container Corp. of America, Carthage, Ind.

Container Corp. of America, Wabash, Ind.

Group D

The Flintkote Co., Little Ferry, N. J.

American Writing Paper Corp., Nonotuck Division.

Central Fibre Products Co., Vincinnes, Ind.

The Fort Orange Paper Co., Paper Mill.

Division II—Paper and Board Remanufacturing

The Flintkote Co., Chicago Heights, Ill.

The Fort Orange Paper Co., Box Factory.

Container Corp. of America, Baltimore, Md.

Container Corp. of America, Cincinnati, Ohio.

Marathon Paper Mills Co., (Wausau Division).

Container Corp. of America, Cleveland, Ohio.

Container Corp. of America, 35th Street Division, Chicago, Ill.

NSC Awards

For several years, J. E. Long, superintendent of safety, The Delaware & Hudson Railroad Corporation, and past president of the National Safety Council, has presented the NSC awards and he was expected to officiate at the presentation this year. However, as he was unable to attend, W. Dean Keefer, formerly of the National Safety Council staff, now with the Lumberman's Mutual Casualty Company, acted for him. Mr. Keefer referred to this being the 17th contest in the Paper and Pulp Section. He complimented the work that has been done by the Section, and credited the Paper Industry Safety Contest as the first to be organized anywhere in the United States, Canada, and South America. He added it might be the very first to have been established anywhere in the world.

Edward Benton Fritz Memorial Trophy

Following the presentation of the NSC trophies and certificates, the chairman asked Mr. Dowd to announce the winner of the major trophy. This award is given each year by Fritz Publications, Inc., publisher of THE PAPER INDUSTRY AND PAPER WORLD, Chicago. Edward Benton Fritz, founder of that business, was devoted to the cause of safety and he was one of the pioneers of the Section who were influential in establishing the annual contests.

The award of this memorial trophy is made each year to the group winner in the Contest which showed the best safety record. A board of five judges makes the choice by considering the records of the group winners—Frequency, Man-hours worked, Physical condition, and other contributing factors.

The presentation of the award is made each year by Mrs. Annie C. L. Fritz, vice president and treasurer of Fritz Publications, Inc. After announcing the name of the winner, Mr. Dowd introduced Mrs. Fritz. She told the Section of the pleasure she felt in presenting this trophy each year, and expressed her interest in the work being done in the cause of safety —a cause to which her late husband had given his support for many years.

Mrs. Fritz spoke of the great need, even in these strenuous times, of a spirit of brotherly love as the great cornerstone of safety. Friendliness and understanding Mrs. Fritz said would keep workers happy and prevent them from becoming accident subjects.

At the close of her remarks, Mrs. Fritz presented to Ernest Dutcher, representing the Pioneer Division of the Flintkote Company, Los Angeles, California, the major trophy (See illustration page 762). This is the first time the major award in the Paper Industry Safety Contest has gone to the Pacific coast section.

Safety Problems Panel

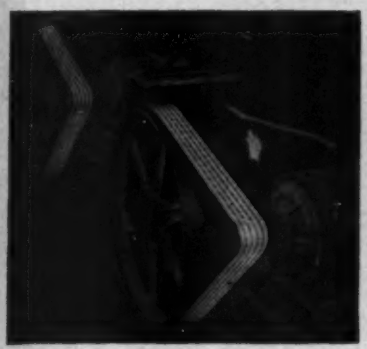
The second part of the Thursday afternoon session was devoted to a panel discussion of 14 questions that had been distributed. These questions had been prepared in response to a question "What Is Your Problem?" The participants in the discussion were:

Discussion Leader—W. G. Etter, personnel director, River Raisin Paper Co., Monroe, Mich.

Ernest Augustus, safety director, The Mead Corp., Chillicothe, Ohio.

Walter A. Gleason, safety director, Hammermill Paper Co., Erie, Pa.

Which of these
GATES V-Belts
Best Fits *YOUR* Needs?



– Steel Cable Belts?
– Rayon Cord Belts?
– Cotton Cord Belts?
– Static Reducing Belts?
– Belts of *Special* Synthetic Rubber?

Phone Your Gates Field Engineer– *He Will TELL You!*

Whenever a drive in your plant gives you even the slightest trouble, it is a good plan to phone the Gates Field Engineer. He is a specialist who *makes a business* of improving drive operation.

For example, it quite frequently happens that one or more drives in a plant will wear out belts faster than seems warranted. In most cases a slight correction in groove angle, an adjustment in tension or, at most, a minor change in drive design will correct the difficulty and save money not only in belt wear but also in increased efficiency of the machine.

At times, however, the service conditions are such that a V-belt of special construction can most profitably be used. Your Gates Field Engineer will *know*—and he can supply a Gates V-belt that is precisely engineered to meet the unusual conditions.

The Gates V-belt of special synthetic rubber is a case in point. During the past five years, Gates has supplied industry with thousands upon thousands of these belts. Under severe conditions of heat and oil, the Gates special synthetic belt actually outwears any natural rubber belt by as much as 230%.

In your particular application, V-belts whose tension members are composed of flexible steel cables—or of rayon cords—may prove to be the most efficient and economical. Static-reducing V-belts may best fit your special need.

In any case, the wisest move you can make is to phone the Gates Field Engineer. He is thoroughly competent to analyze any drive problem. He is completely informed on on the nature and advantages of every type of belt. He will always recommend the practice that will be most efficient and economical for you.

THE GATES RUBBER COMPANY

Engineering Offices and Stocks in All Large Industrial Centers

4310

GATES VULCO ROPE DRIVES

CHICAGO, ILL. 549 West Washington
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ATLANTA, GA. 738 C & S National Bank Building
LOS ANGELES, CAL. 2240 East Washington Boulevard
DENVER, COLO. 999 South Broadway
DALLAS, TEXAS. 2213 Griffin Street
PORTLAND, ORE. 333 N. W. 5th Avenue
SAN FRANCISCO, CAL. 1090 Bryant Street

H. P. Heubner, insurance manager, The Flintkote Co., New York, N. Y.

Miss Marion Dowling, R. N., Lowe Paper Company, Ridgefield, N. J.

At the close of this session, Chairman Richardson repeated an announcement he had made at the opening session on Tuesday. He stated, for the information of those who had not been present on Tuesday, that Miss Jane Notley, R. N., Allied Paper Mills, Kalamazoo, Michigan, had passed away suddenly September 23. Miss Notley had been a regular attendant at the Congress, and last year she participated in one of the panel discussions.

Exhibits

Practically every type of safety equipment, safety devices, and safety clothing was exhibited in the large exhibit on the Mezzanine at the Sherman Hotel. These exhibits drew large numbers of visitors—many of them looking for the newest mechanical safety devices. The United States Army was represented with a fine military exhibit.

The National Safety Council displayed its very complete collection of booklets, posters, and other printed matter. This service is one of the Council's greatest contributions to safety education.

SAFETY SCORES

▶▶▶ THE ANNUAL paper industry safety contest for 1943-1944 began July 1. Forty-nine mills show perfect scores in reports for July-August:

Division I—Pulp and Paper Mills

Group A—

Anglo-Newfoundland Development Co., Grand Falls, Nfd.
Rhinelander Paper Co., Rhinelander, Wis.
Price Bros. & Co., Ltd., Kenogami, P. Q.

Group B—

Consolidated Paper Corp., Ltd., Grand Merem, P. Q.
Wood Conversion Co., Cloquet, Minn.
Quebec North Shore Paper Co., Baie Comeau, P. Q.
Fraser Paper, Ltd., Madawaskha, Maine.
U. S. Gypsum Co., Greenville, Miss.
St. Croix Paper Co., Woodland, Me.
Combined Locks Paper Co., Combined Locks, Wis.
International Paper Co., York Haven, Penna.
The Champion Paper & Fibre Co., Pasadena, Texas.
Flintkote Co., New Orleans, La.

Group C—

Whiting Plover Paper Co., Stevens Point, Wis.
Strathmore Paper Co., West Springfield, Mass.
American Writing Paper Corp., Holyoke, Mass.
Esleeck Manufacturing Co., Turners Falls, Mass.
Ontonagon Fibre Corp., Ontonagon, Mich.
Central Fibre Products Co., Quincy, Ill.
The Mead Corp., Sylva, N. C.
Container Corp. of America, Fernandina, Fla.

Group D—

United States Gypsum Co., Lisbon Falls, Maine.
American Writing Paper Co., Holyoke, Mass.
United States Gypsum Co., Oakmont, Pa.
The Flintkote Co., Little Ferry, N. J.
Marathon Paper Mills Co., Ashland, Wis.
American Writing Paper Co., Holyoke, Mass.
United States Gypsum Co., North Kansas City, Mo.
The Mead Corp., Leominster, Mass.
Rogers Fibre Co., Inc., Bar Mills, Me.
Central Fibre Products Co., Tama, Iowa.
American Writing Paper Corp., Holyoke, Mass.
Spaulding Fibre Co., Inc., North Rochester, N. H.
Central Fibre Products Co., Vincennes, Ind.
American Asphalt Roof Corp., East St. Louis, Mo.
The Mead Corp., Nashville, Tenn.
International Paper Co., Chisholm, Me.
Spaulding Fibre Co., Inc., North Rochester, N. H.

Division II—Paper and Board (Re-manufacturing)

The Flintkote Co., E. Rutherford, N. J.
Container Corp. of America, Cincinnati, Ohio.
Bird & Son, Inc., Norwood Roofing Plant.
Bird & Son, Chicago, Ill.
Fort Orange Paper Co., Castleton on Hudson, N. Y.
Thilmany Pulp & Paper Co., Kaukauna, Wis.
Lanzit Corrugated Box Co., Chicago, Ill.
Container Corp. of America, Rock Island, Ill.
Bird & Son, Inc., Shreveport, La.
South West Box Co., Sand Springs, Okla.
Kimberly-Clark Corp., Appleton, Wis.
Bay West Paper Co., Green Bay, Wis.

The paper industry safety contest is conducted among member mills of the Paper and Pulp Section of the National Safety Council, and runs for twelve months. The present contest covers the period July 1, 1943, to June 30, 1944.

◆

INDUSTRIAL SAFETY COURSE OFFERED BY DEPT. OF LABOR

It is estimated that 625,000 foremen will benefit from in-plant training courses that are designed to improve safety conditions in war production. Approximately 40,000 war plant supervisors who have completed safety training courses conducted in 116 engineering colleges will direct these courses.

When the announcement of these courses was made by Secretary of Labor Frances Perkins, she stated that when the defense program was started three years ago, it was realized that the Nation lacked trained safety engineers. The result was that college courses were started in industrial safety for the initial training of supervisory production men. Much of this instruction was given by more than 600 special agents of the U. S. Department of Labor, all of whom are trained safety engineers who donate 20 per cent of their time to the Government for this work.

Consultation service is also offered to smaller war plants by the special agents of the Department of Labor. Safety records of over 10,000 plants serviced by them last year show a marked reduction in accident frequency in 66 per cent of the cases. More than a million man-days were saved to war production as a result of their efforts.

Information about the free supervisory training courses may be obtained from the Division of Labor Standards, U. S. Department of Labor, Washington, D. C., in the leaflet *What Would You Pay for 8,000 Years' Experience?*

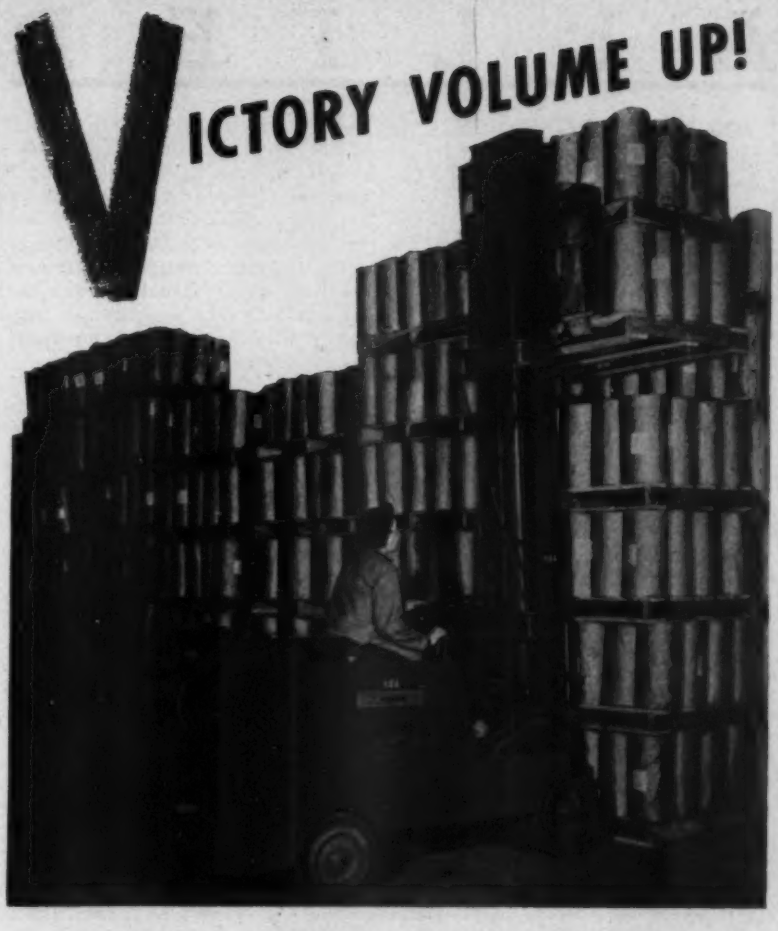
NATIONAL SECURITY AWARD

A new form of recognition which will match the Army-Navy "E" pennant, has just been announced by the U. S. Office of Civilian Defense. This award, known as the National Security Award, will honor plants for providing the safeguards to production without which the steady stream of material to our fighting forces and the necessary civilian supplies almost certainly could not be maintained.

This award will *not* be limited to plants eligible for the Army-Navy "E" and other similar citations, but it will be awarded also to plants enaged in the production of essential civilian goods; utilities, transportation and communications facilities; and any other type of plant or establishment included by the President among the "essential facilities" when he ordered OCD to establish a national Facility Security Program.

To qualify for the National Security Award, a plant must meet standards based on its individual security requirements. These include establishment and adequate training of the five essential protective services: fire forces, air raid wardens, auxiliary police, emergency medical service, and operations and maintenance crews—and enrollment of these protection workers in the Citizen Defense Corps of the community.

The Award will consist of a certificate of merit signed by the Director of Civilian Defense and a distinctive insignia bearing the words National Security Award. Nominations for the Award may be made by a local Defense Council or its plant protection officer, by the plant itself, or by the various federal agencies to which responsibility for security programs in certain plants has been assigned under the OCD facility security program by Executive Order. The nominations will be submitted to the local Defense Council and transmitted to the State Defense Council for approval.



TOWMOTOR SPEEDS SMALL UNIT HANDLING OF PAPER PRODUCTS

To load and move large volumes of small units: to stack them to space-saving heights: to fully utilize available manpower: to save time and to reduce production costs . . . *multiple quantities* must be on-the-move during each handling operation. What's the answer?

Towmotor—the "one-man-gang." Here's why! Towmotor and one man (or woman) hustles your paper products—rolls, bales, sheets or pulp—to plant destinations at speeds up to 10 miles an hour. It picks up loads weighing as much as 10,000 pounds, and spots them or stacks them as high as 25 feet. Result? More materials moved, use of available storage space increased, production schedules met—costs lowered.

Towmotor will do the same for you. Towmotor's new "Data File" explains all. Send for a copy today. Towmotor Corporation, 1220 E. 152nd Street, Cleveland 10, Ohio.

TOWMOTOR

THE 24-HOUR ONE-MAN-GANG

ALLIED

100 YEARS WITH "US"

A special issue of *Us*, employee publication put out by the U. S. Rubber Company, commemorates the company's 100th anniversary.

The company's Naugatuck, Connecticut, plant was the first to start commercial production under the original vulcanization patents and the first product was an overshoe.

An article "100 Years' Experience," which appears in the anniversary issue of *Us*, states: "Today we are converting our 100 years of experience with rubber to replacing that rubber with a new material—synthetic—as the new base for the industry, and a cornerstone, not only for Victory in this War, but for the advancement, through future products, of our higher standards of living."

◆

STANDARD OIL (IND.) SENDS CHRISTMAS PARCELS OVERSEAS

On the first of October, the Standard Oil Company of Indiana, Chicago, completed the shipment of 600 Christmas parcels to employees in the Armed Forces overseas. The company is now preparing parcels for 2,400 additional employees in military service who are at domestic bases.

The parcels for the men include cigarettes, candy, toothpaste, razor blades, shaving cream, hair dressing and comb. For the women, cold cream is substituted for masculine items in the parcel. Each parcel also contains a special greeting card from Edward G. Seubert, president of the company.

▸▸▸ A CHANGE IN THE NAME of S. F. Bowser & Company, Inc., Fort Wayne, Indiana, has been announced. Effective September 16, the name of the company became Bowser, Inc. The announcement states there is no change in the corporate status, the change having been made to conform with the name which most suggests the company's products, and also to simplify the corporate name.

◆

CHEMICAL MARKER BY CALCO INSURES SAFETY OF AIRMEN

A chemical that lights up the water of the ocean, making a huge yellow patch visible several miles away in a plane 10,000 feet in the air, is one of science's contributions looking toward the safety of American airmen. The solution, described officially today for the first time, will enable searching planes to discover and rescue airmen who have been shot down in action, whether they are afloat in life rafts or floating alone in life jackets.

The contents of a package three inches by five will light up a patch of sea 40 feet in diameter and instead of being just surface slick easily dissipated by the waves, the patch is tridimensional—having width, length and depth.

The package of "Dye Marker" as it is officially known, is cemented to the aviator's life jacket and has a rip flap, somewhat similar to the rip-cord of a parachute. When a flyer lands in the water, he waits until a rescue plane is within range before breaking the seal. He must be certain, however, that it is a friendly plane before he marks his position. Life rafts also carry cans of "Dye Marker."

ARMY-NAVY "E" AWARDS

"E" Pin

Hercules Powder Company, Wilmington, Delaware—A signal honor was conferred on this company, when it was announced on September 30 that more than 1,800 men and women of the company, home office and Experiment Station are now entitled to wear the Army-Navy "E" pin. Under the rules of the War Department governing "E" awards, employees of the central office of a corporation are given "E" pins after a majority of the employees of that corporation has received the award. Two-thirds of the company's 31,000 employees, including those in government-owned ordnance works, now wear "E" pins. Hercules plants that fly the Army-Navy "E" flag are: Radford Ordnance Works; Kenvil, New Jersey; Parlin, New Jersey; Hopewell, Virginia; Port Ewen, New York; Belvidere, New Jersey; and Hercules, California plants.

White Star
(Continued Excellence)

Masonite Corporation, Laurel, Mississippi.

The Bauer Bros. Company, Springfield, Ohio.

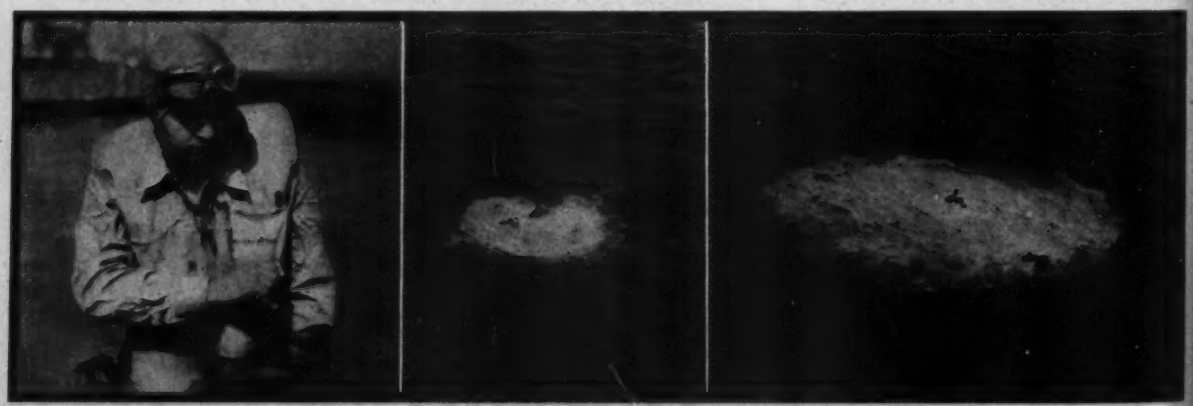
Inland Steel Company, Indiana Harbor, Indiana.

Shartle Bros. Machine Company, Middletown, Ohio.

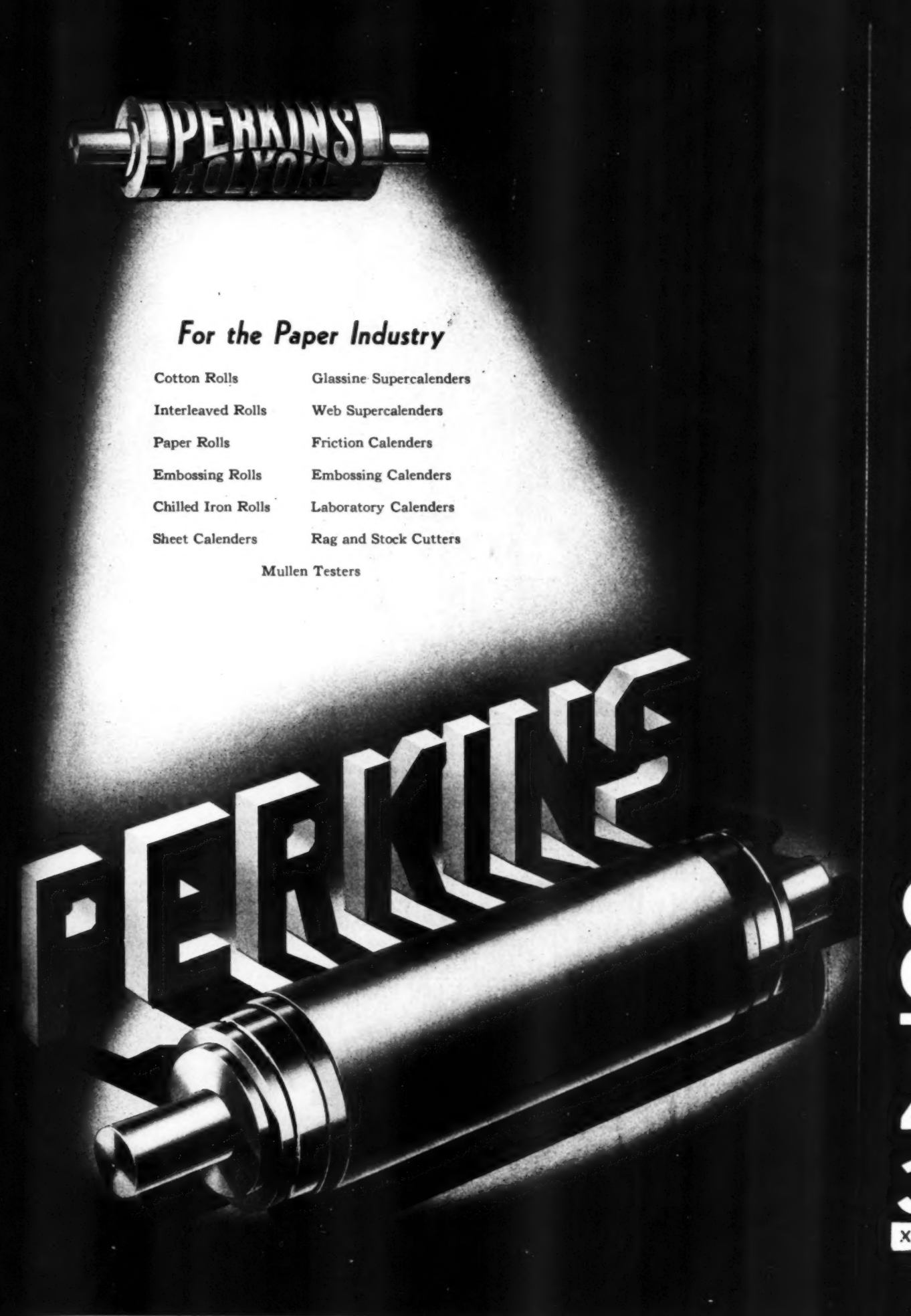
Second White Star

Ohio Injector Company, Wadsworth, Ohio.

(Each white star denotes six months of "continued excellence.")



LEFT—Showing how the life jacket "Dye Marker," the Army and Navy's new device for locating aviators who have been forced down at sea is attached to the life jacket. CENTER—A few seconds after aviator disperses contents of life jacket "Dye Marker" package a brilliant yellow circle begins to form. RIGHT—Three minutes after pulling rip flap, wide dispersal of dye forms around the aviator.


PERKINS
HOLYOKE
For the Paper Industry
Cotton Rolls
Interleaved Rolls
Paper Rolls
Embossing Rolls
Chilled Iron Rolls
Sheet Calenders
Glassine Supercalenders
Web Supercalenders
Friction Calenders
Embossing Calenders
Laboratory Calenders
Rag and Stock Cutters
Mullen Testers
PERKINS

MERIT AWARD TO HERCULES SUPT. BY ORDNANCE DEPT.

A citation of merit was presented October 4 by the Ordnance Department, U. S. Army to Raphael L. Stern, chemical superintendent of the Parlin, New Jersey, plant of Hercules Powder Company. Mr. Stern's adaptation of wood pulp for the manufacture of smokeless powder has increased the output of explosives and eliminated the threat of a cotton "bottleneck."

The award, which cites Mr. Stern for "distinguished service to his country in the struggle to maintain the freedom of all people," was presented on behalf of Major General L. H. Campbell, Jr., chief of ordnance, by Col. Gilbert I. Ross, chief of the New York Ordnance District. L. N. Bent, vice president, and E. C. Crum, plant manager, of the Parlin plant of Hercules Powder Company, and officers of the New York Ordnance District, witnessed the presentation.

◆

Col. G. I. Ross, commanding officer, N. Y. Ordnance District, makes presentation to Raphael L. Stern, Hercules Powder Co.

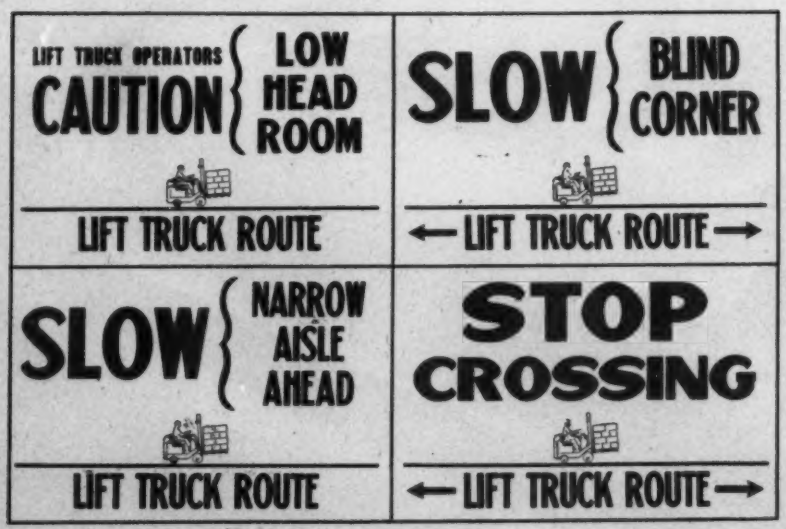
TOWMOTOR DESIGNS NEW SAFETY POSTERS

A new series of safety signs prepared by the Towmotor Corporation, Cleveland, Ohio, are designed to promote plant safety without sacrifice of production speed or efficiency. These four signs, for display along factory lift truck routes, are offered free to safety directors and other executives charged with plant efficiency.

The Towmotor Company found that stepped-up production schedules and the bigger job of materials handling given industrial lift trucks created the need for such signs. The signs are 14 in. by 22 in., and are easily read. Safety directors are invited to submit requests for these posters direct to the Towmotor Corporation, 1226 East 152nd Street, Cleveland 10, Ohio, specifying the number desired.

◆

▶▶▶ A NEW NAME has been given to Detroit Rex Products Company, Detroit, Michigan, but there is no change in ownership, company policy or managemnt. The company was established in January, 1920. The new name of the company is Detrex Corporation. The new name is significant because Detrex has become known as a trade name.



▶▶▶ NO FURTHER RESTRICTIONS apply to sales of soluble nitrocellulose in the United States as well as abroad. This announcement has just been made by Hercules Powder Company. On May 14, 1943, Soluble Nitrocellulose General Preference Order M-196 was revoked, permitting purchase without approval of WPB, but the supply remained limited. Since then, the supply of Hercules nitrocellulose has improved and priority ratings are no longer required.

◆

▶▶▶ A CONTROLLING INTEREST in the LeVal Filter Company, Chicago, has been acquired by Whiting Corporation, Harvey, Illinois. H. D. Grant, president of Whiting Corporation, announced that the plant will continue operating at the present address, and H. L. Pratt, vice president of LeVal Filter Company, would remain in charge.

◆

▶▶▶ A NEW PLASTIC so versatile that its uses vary from grease and gasproof coatings for paper to rubberlike molded articles and from adhesives to "sizes" for nylon and rayon will be available in large quantities for postwar applications. So stated a recent announcement by the Electrochemicals Department of E. I. du Pont de Nemours & Company. This plastic is known as polyvinyl alcohol resin, and it is characterized by exceptional toughness and resistance to oil, grease, and many solvents.

Titanox
HOLDS THE KEY
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Convention Papers . . . Abridged

Navy Supply Lines

REAR ADMIRAL EVERETT G. MORSELL SC, USN

District Supply Officer of the Ninth Naval District, Great Lakes Naval Training Station, Great Lakes, Ill.

Everyone who is concerned with the logistics of this War—the procurement and movement of supplies—is well aware that the progress our Armed Forces is making is due primarily to the fact that American industry has done what the Axis nations considered impossible.

It is no exaggeration to say that the duration of the War and the number of casualties we may suffer in winning it may in part be determined by the pulp and paper industry.

Our supplies, no matter how much we produce, are of no avail unless they are delivered READY FOR USE when and where they are needed. All kinds of supplies must be packed for shipment in a manner that will assure their arrival in undamaged condition. That is a primary responsibility of your industry.

In the global War, with our theatres of operation extending from the arctic to the tropics, we have no way of knowing when supplies are packed, which or how many of the seven seas they will have to traverse, or in what quarter of the globe they will be used or when. They must be ready for instant use whether they are unpacked in winter blizzards of the far north, under glaring sun of arid deserts, or in the steaming humidity of equatorial jungles.

War transportation does not know the cautious "Fragile," "Handle With Care," "This Side Up," and "Use No Hooks." Transportation may include heavily-loaded cargo ships, airplanes, submarines, trucks, jeeps, dogsleds, rafts, camel or burro back, or native porter. Boxes may be shaken like dice in loading nets or hoisted with plate hooks from ships' holds to be tumbled into wave-tossed lighters miles from shore. They may be floated through pounding surf to open beaches where they may be piled, exposed to the elements for days or weeks. Some may be dropped by parachute through enemy fire, or tossed from speeding trucks in combat zone.

Through the co-operative efforts of government agencies and industry, standardized specifications for containers that will serve the purpose for which they are designed have been developed. Those specifications are published in an illustrated manual titled *Army-Navy General Specifications for Packaging and Packing for Overseas Shipment.* This practical reference manual is an indispensable aid to every manufacturer now producing material and supplies for overseas shipment. Copies may be obtained free on request to the Bureau of Supplies and Accounts, Navy Department, Washington, D. C. This manual provides manufacturers with the latest information and best practices involved in packing right to reach the fight.

We have made great advance in protective packaging. But we cannot say that this problem is completely licked. Operational conditions constantly change. New types of equipment and varied supply requirements demand constant developments in packaging. But the progress we have made through co-operative efforts gives every assurance that continued co-operation between government agencies and industry will result in a satisfactory solution for every packaging problem that arises in this war of supplies.

If precious skill, labor and materials are wasted because supplies we produce fail to reach our fighting men due to faulty packaging, the War will be needlessly prolonged. That tragedy must not be permitted to happen.

The pulp and paper industry holds a strategic position to assure maintenance of our flow of supplies. The Navy knows it can count on you to make it possible for all producers of the supplies we require to "pack it right to reach the fight."

Paper Sinews of War

BRIGADIER GENERAL E. E. MacMORLAND,

Office of the Chief of Ordnance, U. S. A., Washington, D. C.

We have found in the Army that this is not entirely "the age of steel." If we were to define these times in terms of our materials, I suppose we should call it the age of combined materials—of steel, of aluminum, oil, wood, plastics, and not least among them, paper—all combined in new ways. So it is that paper has become one of the sinews of war.

A few months ago in Casablanca I was watching some of our guns and instruments being unpacked. One of these pieces was a mechanism used to direct anti-aircraft gunfire which had evidently been dropped and the box damaged. These directors weigh a quarter of a ton apiece, but they are so precise and, in a sense, so delicate, that they have to be manufactured in air-conditioned rooms where the slightest flake of dust or hint of rust is kept from their watch-like interior. Their heavy metal parts are balanced nicely to move on precision gears, to calculate—faster than any human brain—the height, speed, and direction of flight of enemy planes flying 400 miles an hour, and to direct the fire of our great guns to the precise spot where the flight of a plane crosses the path of the shell. By all rights that director in the damaged box should have been done for. We had the box opened then and there. Inside we found our mechanism undamaged.

How was this $25,000 instrument saved from destruction? It was very simple, really. The director had been cushioned in paper. After trying steel spiral springs and wood cantilever springs, we hit on special built-up corrugated pads wrapped and sealed in heavy waterproof paper. These pads are cheap, easy to assemble, and they protect perfectly the instruments which it is so essential to deliver in serviceable condition to the troops overseas.

We have found that the science of production alone is not enough and so have enlisted also the best efforts of the science of protection. The fruits of American industry much reach our fighters in usable condition.

We have asked you of the paper industry to develop waterproof, moisture-vapor proof and greaseproof papers, new types of containers, new wrappers. Your knowledge has in every instance given us what we need, and I want to tell you that we have used your product well.

The Ordnance Department is using great quantities of the acid-free, greaseproof wrapping papers successfully developed to protetct metal surfaces from corrosion. Army Ordnance is using from twelve to fifteen million square yards a month, enough to cover perhaps twenty-five thousand acres a year, and other Army agencies, and the Navy, are using additional amounts. All this war-use has necessitated rapid expansion of production of critical types of paper products. I understand the paper industry produced something like four thousand tons of waterproof paper in 1941; today, the annual production is more than two hundred and thirty thousand tons. A year ago you were making less than a million square yards a month of greaseproof wrapping; today, Army Ordnance alone is using fifteen times that much a month. A year ago there was no paper suitable for our packings from which we remove all moisture to protect finished surfaces from corrosion; today paper is a most important component part of almost all the material the Army is using for this purpose. At the start of the War there was no fiberboard capable of withstanding the rigors of wartime export shipping; today the new V-boards and other special waterproof fireboards are carrying a great part of the Army's ammunition, subsistence, and other supplies.

The Army has obtained from your organization, the Technical Association of the Pulp and Paper Industry, speedy assistance

All of the papers by Army and Navy men which were read the first day of the **Army and Navy Conference,** sponsored by **TAPPI** in Chicago, September 21-24, have been abridged and are published in this section. Abridgments of other Conference papers will appear in subsequent issues.

HOW LONG Should a Dryer Felt Last?

Because a Dryer Felt's cost is only a small fraction of the total cost of drying paper—many progressive mills today are saving money, not by "stretching the life" of old felts, but by replacing them as soon as their drying efficiency begins to fall off. One plant reports a material saving in steam cost alone, when they removed an old felt with glazed-over and clogged weave preventing free elimination of moisture.

The new Felt used was the HOOPERWOOD Style 218—an extra-porous, light-weight Cotton Felt with smooth surface for fine finish and with the same working strength as heavy felts.

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whenever these needs have arisen. Your association has established standards, gathered and disseminated information to help the entire paper industry in these new assignments, and developed tests to assure that our soldiers could depend on the protective wrappings we use. We depend on you to understand our problems and to help translate them for the industry.

There must be no relaxation of effort nor of standards. And in the degree the Army requires your best production, we must insist that not so much as a square foot of your fighting paper slips through below standard.

Today we need greaseproof wrappings using the least possible amounts of wax, synthetic resins, plastic coatings, glycerin, and other critical materials urgently required for other war purposes. We need papers of higher waterproofness and resistance to moisture-vapor and of greater strength for use with our dehydrated packs. We need better waterproof papers for lining our boxes. I am sure you will realize that every urgency is a continuing urgency in war, and that you will provide these materials.

The weapons which Army Ordnance sends the men are reaching them now in good-as-new condition, and I can think of nothing of which you might be more proud today than of the fact that your efforts have been an essential contribution to Victory.

"—you have set up a record which is only to be broken"

—James Forrestal
Under Secretary of the Navy

Official U. S. Navy Photograph

You are talking our language, Mr. Forrestal!

We acknowledge the honor and privilege of flying the Army-Navy "E" flag. We acknowledge, too, that this recognition comes to us for work already done. We fully realize the increasing need for Warren Pumps to meet the schedules of our Navy's building program. Therefore, we accept your challenge, Mr. Forrestal, that we have set up a record and we are determined to surpass it!

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Packaging Materials Required for Preservation

Lt. (jg) D. R. WEEDON, Jr., USNR
Naval Aircraft Factory (Philadelphia)

All of the materials and procedures which I will discuss are covered in Army and Navy Aeronautical specifications. Since these specifications are co-ordinated and jointly approved by the Army Air Forces and the Bureau of Aeronautics, my remarks will apply in general to both the AAF and to the Navy.

When we speak of preservation in connection with packaging, the preservation procedures to which we refer are all temporary in nature. The two procedures used in aeronautics are covered today in Army-Navy aeronautical specification AN-P-13, and have been identified as Method I and Method II.

Method I consists of properly cleaning the part to be preserved, then applying an approved corrosion preventive compound, and wrapping in a greaseproof paper. Preservation by this method depends upon the maintenance of the film of corrosion preventive compound, whereas Method II requires cleaning the part and sealing it in a moisture-proof barrier with an included dehydrating agent. In this method preservation is accomplished by maintaining the relative humidity below thirty per cent within the container. It has been established that corrosion will not occur at relative humidities under thirty per cent, and it is necessary to renew the included dehydrating agent when the color of the humidity indicator inside the container shows that the humidity is above this value. This, of course, means that continuous inspection and re-preservation is necessary and that it is not feasible to overdo the use of Method II. Method II should be used only where preservation with corrosion preventive compounds is undesirable due to the nature of the part. Materials packed under this method should be ready for use immediately upon arrival at destination. Generally speaking, it is used only for assembled equipment where degreasing would be impossible or require complete disassembly.

Since I have said that both of these methods are temporary procedures, the question is frequently asked, how long will each of these two methods preserve metal equipment? Frankly, we are still searching for the answer to that question. But since there are so many variables in each method, it is a question which cannot be answered without knowing all of these variables.

It is not possible to say that one variable is more important than another, but it is obvious that the conditions of temperature, humidity, submersion and cycling are all of major importance in determining the time for which a preservation procedure will be effective. In the case of Method I additional variables exist in the cleaning and application of the corrosion preventive compound as well as the protection offered by the particular compound itself. In the case of Method II either the use of a container with a considerably lower moisture vapor transmission rate

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than that required, or the use of a dehydrating agent with a greater absorption than that required, will lengthen the preservation life.

The immediate question might well be, how was the formula for the amount of dehydrating agent as stated in AN-P-13 derived. It is based solely on the experience which the Army and Navy Aeronautical services had with Method II at the time that this specification was written, and it is subject of course to any changes made necessary by additional experience. A frequent statement is that the amount of dehydrating agent as computed by using the formula in AN-P-13, will preserve for six months when Method II is properly applied. I hope that you realize that this cannot be true, and that a Method II preservation job can last anywhere from a few weeks to a few years, depending upon the variables just discussed.

In dealing with Army-Navy specifications, apparently the least understood item is that of qualifications of materials under the various Army-Navy specifications which provide for qualification tests. The purpose of qualification is not to substitute for inspection tests, but to establish a list of approved products under the specification where there are tests in the specification which could not be conducted as inspection tests due to the complexity, the equipment involved, or the time necessary. In order to qualify under an Army-Navy specification, it is necessary for the manufacturer to write to the testing agency as stated in the particular specification and request authorization to submit a sample. When a qualification list is originally set up all interested manufacturers should submit their samples to the testing agency and tests will be made without a charge. After a qualification list has been established it is published in the form of an ANA bulletin; if a fee is to be charged, this will be mentioned in the authorizing letter.

After completion of tests, a report must be written which will recommend certain manufacturers for approval. However, prior to publication of the bulletin, it is necessary that both services approve the test results. When this approval has been obtained the bulletin is published covering the applicable specification and is available to anyone who applies to any of the agencies supplying the specification. Manufacturers frequently become impatient while waiting for the issuance of the bulletin and begin writing or calling on the various agencies, including the testing agency. Furthermore, they might even go so far as to submit samples to another aeronautical laboratory which is not even the qualifying laboratory.

Each specification provides for a particular qualifying laboratory and the system for approval of the recommendations is established. It will be appreciated that a considerable length of time is necessary for this routine. We regret that it is impossible to notify manufacturers as to the acceptance or rejection of the materials they have submitted prior to the issuance of the bulletin but because all are treated alike in this respect we are confident that you will understand and give us your whole cooperation.

Sometimes it is necessary for a contractor to use material covered by a specification requiring an approved list prior to the issuance of the bulletin. Furthermore, other specific problems regarding preservation as well as packaging and packing, frequently confront the contractor to the Army or Navy Aeronautical services. In either case the manufacturer should prepare a letter showing what he proposes to use, or what particular method he desires along with test and service reports to justify his claim, and send this letter to the packaging section of the Service with whom he has a contract. In the case of the Army the Container Section is under the Material Command at Wright Field, Dayton, Ohio, and in the Navy the Packaging Section is in the Aviation Supply Office at the Naval Aviation Supply Depot in Philadelphia. Both of these sections were established to assist contractors in their preservation, packaging and packing problems, and all such problems should be referred directly to them. These agencies, when necessary, consult other sections and both the Army and Navy packaging sections maintain very close liaison in so far as aeronautical supplies are concerned.

In order to bring to your attention the various Army and Navy aeronautical specifications which apply to preservation and packaging, I wish to list these specifications and give a brief description of each. AN-C-52, which covers Exterior Corrosion Preventive Compound, is primarily for use with Method I. Type I compound under this specification is for relatively hard preservative films and is applied to a cold dip solvent application. Type II Grade A compound is a 120 degree melting point material, and Type II Grade B compound is a 150 degree melting point material, both of which must be applied by hot dipping. Since Type II Grade A compound does not give the protection provided by either of the other two compounds, it is not intended for use on the exterior of parts for permanent storage where a high degree of protection is necessary.

The greaseproof paper specification used is AN-P-12 and covers two grades of paper, Grade A paper being red and more neutral than Grade B paper. It is absolutely necessary that Grade A paper for this application either be colored red or contain red identifying marks. This red marking was initially and still is intended to indicate that the manufacturer has taken extra care to produce a neutral and acid-free sheet. It also serves to distinguish this paper from other papers that may be in a packing room.

In the case of Method II, the moisture barrier is covered by specification AN-C-67. This specification is a general specification and will require additional supplemental drawings for the procurement of a container of the proper size and with gaskets when required. The dehydrating agent specification is AN-D-6 and covers five types of material. However, in general only the Type V material which is furnished in bags and is ungraded by size, is used for dehydration in connection with preservation. Types I and III are graded according to size and types II and IV are respectively the foregoing two types impregnated so that a color change is obtained with various relative humidities.

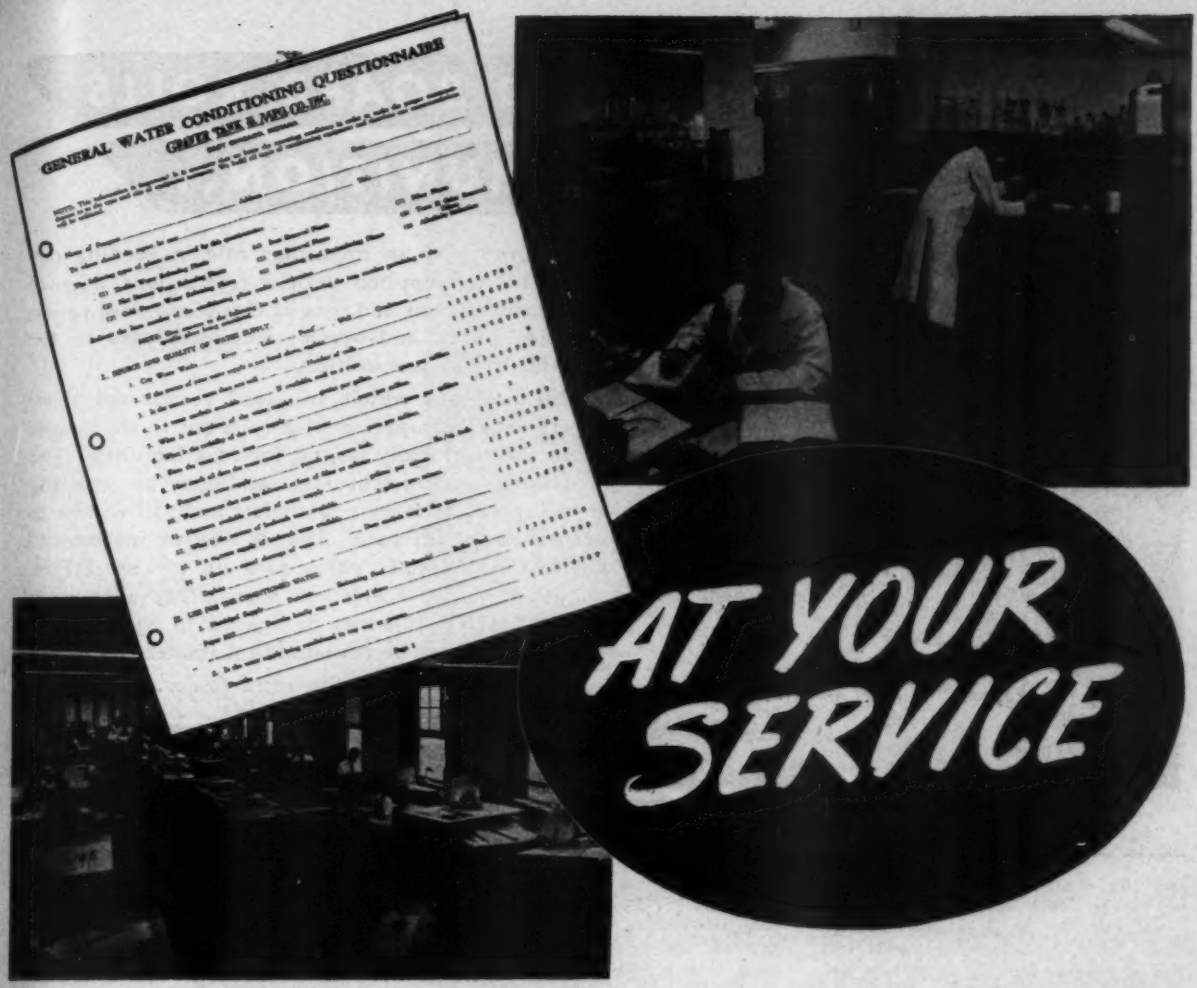
There are also three sizes of humidity indicators covered in Army-Navy Drawings 7511, 7512, and 7513, the difference in these humidity indicators is merely one of size, all function in the same manner. Included in this set of specifications is AN-T-12 for moisture-resistant tape used in sealing openings as well as moisture proof containers particularly when other means are not available. Two specifications AN-P-47 and AN-VV-C-576 which cover dehydrator plugs and an oil film type corrosion preventive compound respectively were designed primarily for engines and may also be used in connection with Method II preservation under AN-P-13.

There are also two additional specifications which were developed specifically for use in connection with preservation of aircraft engines, which is covered in AN-F-E-568. These additional specifications are AN-O-P-406 and AN-E-1 which cover respectively, transparent plastic film, and envelopes made from this film. It is to be noted that material purchased under these latter two specifications is not ordinarily to be used in connection with preservation and packaging by Method II in An-P-13.

The only approved list which has been printed to date is the one for an AN-VV-C-576 oil-type corrosion preventive compound. Approved lists for the other preservation and packaging specifications will be published in the near future with the exception of the greaseproof paper specification AN-P-12, the tape specification AN-T-12, and the plastic film specification AN-O-P-406, none of which call for qualification testing.

Such things as deciding which parts should be preserved by Method I or II and having made that decision, what compound to use in the case of Method I, or the preparation of the drawing, and the calculation of the quantity of dehydrating agent to be used in connection with Method II, are engineering functions and must be treated as such. It is equally important to design a proper preservation procedure as it is to design a part itself; for under present conditions, improper preservation can render the part as useless as improper design. With the procedure decided upon it is still necessary to maintain a close check on the application of the procedures and materials.

There are many cases on record of simple errors such as dipping a part at an improper temperature, improper cleaning, insufficient precaution to remove moisture from the part prior to preservation, and permitting too great a time interval between the various preservation operations. In the case of Method II there have been instances where the parts have been merely dropped in the moisture barriers with the dehydrating agent, the barriers sealed, and placed in the shipping containers. The barriers not being protected were punctured after the first handling. There are also instances where the day's dehydrating



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agent for a particular operator had been laid on his bench after having been removed from the can in which it is supplied. Since the dehydrating agents will pick up moisture from the atmosphere very rapidly it is clear that the dehydrating agent that this operator uses during the day would lose its effectiveness before it was sealed in the barrier. Other simple items such as mailing labels on the sides of Method II pack-ups with extra long nails which will puncture the barrier are obviously wrong when one stops to think about them, but they are errors which are being made and must be continually guarded against. Another practice, that of opening Method II packages to make a count or material inspection, must be discontinued so as to avoid the use of excessive amounts of dehydrating agent which must be replaced each time the container is opened.

In the case of the AN-P-12 Greaseproof Paper specification, we are seriously considering a corrosion test; for this corrosion test a polished 1 in. diameter metal rod, 3 in. long is rolled in a 6 in. x 9 in. sheet of the paper to be tested. The ends are folded in and the paper is tied by means of a wire. Each paper to be tested is rolled on a polished steel, a polished copper, and a polished aluminum rod. The wrapped rods are then exposed in a cabinet at 100 degrees Fahr., and 95 per cent relative humidity for a period of 68 hours. If used the requirement would be that there be no corrosion on any of three rods at the end of this period. At present a round robin on this test method is being conducted with a number of different interested laboratories co-operating. Although requirements and test methods are still in a formative stage, both a folded greaseproof requirement and an aging test are being tried.

No major revisions are contemplated on the exterior corrosion preventive compounds covered under specification AN-C-52. However, it is possible that an additional type or two may be added at some future date.

Regarding pressure sensitive tape under AN-T-12, the inclusion of an additional type of tape which will be paper backed instead of cloth backed is being considered. This tape would find use particularly where the high strength of a cloth back tape would not be required. Another change which is being contemplated in this specification is a change in the method used to test the moisture vapor transmission. Early in this program, AN-C-67 specified the General Foods moisture vapor transmission test. For tape we are considering modifying this test procedure only to the extent that the tape be applied over a slot in a thin metal disc which is in turn sealed with wax in the cup normally used in container material testing. The slot which we are now using is 1⅛ in. x 3⅛ in. and the tape sample is 2 in. x 4 in. This test has been run numerous times at the Naval Air Experimental Station and has been found to be reproducible.

In connection with the plastic film specification AN-O-P-406, it is proposed to delete the type requirements which are based on thickness of the film, and instead have only two types, one of which would be a hot sealing, the other a non-heat sealing type of film, which would be sealed by special means. This is being done in an attempt to increase the possible suppliers and also encourage development by industry so that others may meet this specification. A further revision of this specification is being considered in that the moisture vapor transmission test be conducted in accordance with that set forth in the moisture impervious container specification AN-C-67.

In AN-C-67 itself several changes are being considered. It is likely that this specification soon will be revised to specify three types of containers. The first of these would be a transparent container, the second an opaque container with a window, and the third an opaque container without a window. It appears that there is need for a moisture proof container without a window, and therefore, this type of container is being considered. However, it will still be necessary to include a humidity indicator. Possibly the use of a humidity indicator in the windowless container is not clear, but it will be appreciated that if a large shipment were received which would be drawn on from time to time, the person opening the shipment could immediately have the containers still remaining for storage opened and represerved if those drawn on indicated a need for this procedure. Therefore, the requirement for provision to be made for repeated closures will be maintained. Care

YES, PAPER MAKING HAS COME A LONG WAY SINCE 1830

Then mass production of paper was only an idea subscribed to by a very few but none of whom had applied it to manufacture. As inventive genius came to be applied, the workshop became a factory, progressing thereafter until tons of paper were produced faster than sheets. Production machines replaced the artist's tools. Even the felt layers used to remove water from the sheets were replaced by production felts. Progress in felt making has paralleled progress in paper making. Since 1890 Appleton Felts have met all requirements of paper mill production—today preferred by mills everywhere.

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This advertisement is a continuation of a series started in 1940 depicting early history of paper making.

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should always be taken to have sufficient supplies of activated dehydrating agent on hand at all times where it may be necessary to carry out re-preservation. In this specification also a creasing test for use on flexible materials when testing for moisture vapor transmission will be specifically stated. The procedure will probably be as follows: A 6-in. square sample will be folded with four equidistant parallel creases placed in the square by alternating the direction of folding on each successive one so that the sheet is folded in accordion style. This stack will then be placed between two rigid flat plates and a weight of 36 lb. be applied for one minute. The sheet would then be opened and the creasing under the weight process repeated, making the second series of four folds perpendicular to the original folds. A circular sample will then be cut from the center of this creased square and tested for moisture vapor transmission in accordance with the usual procedure. A further consideration is a seam strength requirement in this specification. It will be appreciated that containers supplied under this specification are for use on metal parts and equipment which in general are heavy and frequently large. Furthermore, in most cases the opening of the container and the packing is a hand operation, since the volume of equipment of one size so packed for the aeronautical services is not large. Therefore it is felt that a seam strength requirement will be desirable. The requirement proposed is that a 1-in. sample of the seam must support a dead load of ½ lb. for an hour when the test is conducted in a humidity cabinet operating at 100 degree Fahr. and 95 per cent relative humidity. This is the same cabinet which is required to conduct the container test under the specifications at present. It will therefore not require additional equipment to make this test.

New proposals are constantly being made in an effort to improve the preservation of metal parts and equipment. We want to encourage all manufacturers who are interested in this vital problem to present samples of their material to the Aeronautical Materials Laboratory at the Naval Air Experiment Station, Philadelphia Navy Yard, so tetsts can be made. The development of new materials is a continuous process and requires much effort and ingenuity.

How to Do Business with the Navy

Lt. (jg) ROBERT FAEGRE, SC USNR
Navy Paper Section
Bureau of Supplies and Accounts, Navy Department (Washington, D. C.)

It has often been said that the Armed Services frequently do not get the voluntary assistance of the majority of paper producers—simply due to the formidable prospect of finding out where to give that much needed assistance. Every mill or converter used to think that the "ropes" were impossible to reach without the full time help of a mill representative or agent located permanently in Washington or in the vicinity of other large procurement activities. In large measure this used to be so, and I say "used to be" because I believe I can convince you that this is not the case now. We are prejudiced, I'll grant, but nonetheless I believe you will find that contact with the Navy Department is very easily made and maintained.

To start at the beginning, let us first turn to the ordering and receiving activity. By personal contact with the field on the part of the officers now responsible for paper procurement, reasonable requests for stock replenishments are made. I say "reasonable" from the aspects of quantity and quality which is sufficient to meet the required purpose. For example, all field activities formerly used 25 per cent rag mimeograph paper. To conserve sulphite pulp, groundwood mimeo is now used almost exclusively, and with proper specification control, this sheet answers the normal purpose. Once the requirements are received in the Bureau, the responsible procurement section has already done considerable spade-work. Complete inventory records are made up prior to each stock replenishment period, so that excesses at one depot can be diverted to a second, thus avoiding an unnecessary tonnage burden on the mills.

When the requirements reach the Bureau of Supplies and Accounts, they are sent for specification analysis to the Paper Commodities Section in the usual manner. I believe you realize that all Government Agencies are obliged by law to buy material to Federal Specification where possible. However, each Agency is able to recommend changes to Federal Specifications and this is done so frequently to keep abreast of mill operating conditions, that the whole question becomes quite difficult without personal contact between yourselves and the purchasing officers.

Under the War Powers Act, the Navy has two means of requesting bids from suppliers; either on the basis of a tender or by direct contact on the telephone. This depends on the complexity of the item concerned. Suppose there is a quantity of sulphite writing paper in standard cut sizes. It would only waste time to advertise for bids. Capable producers are selected according to geographical adjacency to the delivery points and direct request for bid is made. The Paper Section has an accurate knowledge of all suppliers, their facilities, etc. The War Production Board also makes available the position of the suppliers; that is, how much tonnage they are able to offer in relationship to other direct war contracts, and also what the status of their raw material is apt to be. If there are many varied items of a single grade and the demand is not so urgent, tenders will be issued and mailed to suppliers capable of furnishing the material desired. Mailing lists have long since been prepared according to grade and mill capability.

You will recall that we always request a sample of the material you propose to furnish. This is sent to the Naval Clothing Depot in Brooklyn, New York. You have, doubtless, asked yourselves, what a clothing depot has to do with paper. The answer is that the Navy Laboratory for testing paper is located there. This Laboratory is competently supervised by trained officer personnel and has the most up-to-date testing machines and conditions available. After all, we are anxious to see what sort of a sheet you are selling, and I don't believe you can blame us. Recommendations from the Naval Clothing Depot, translated into mill conditions, are important in the making of awards.

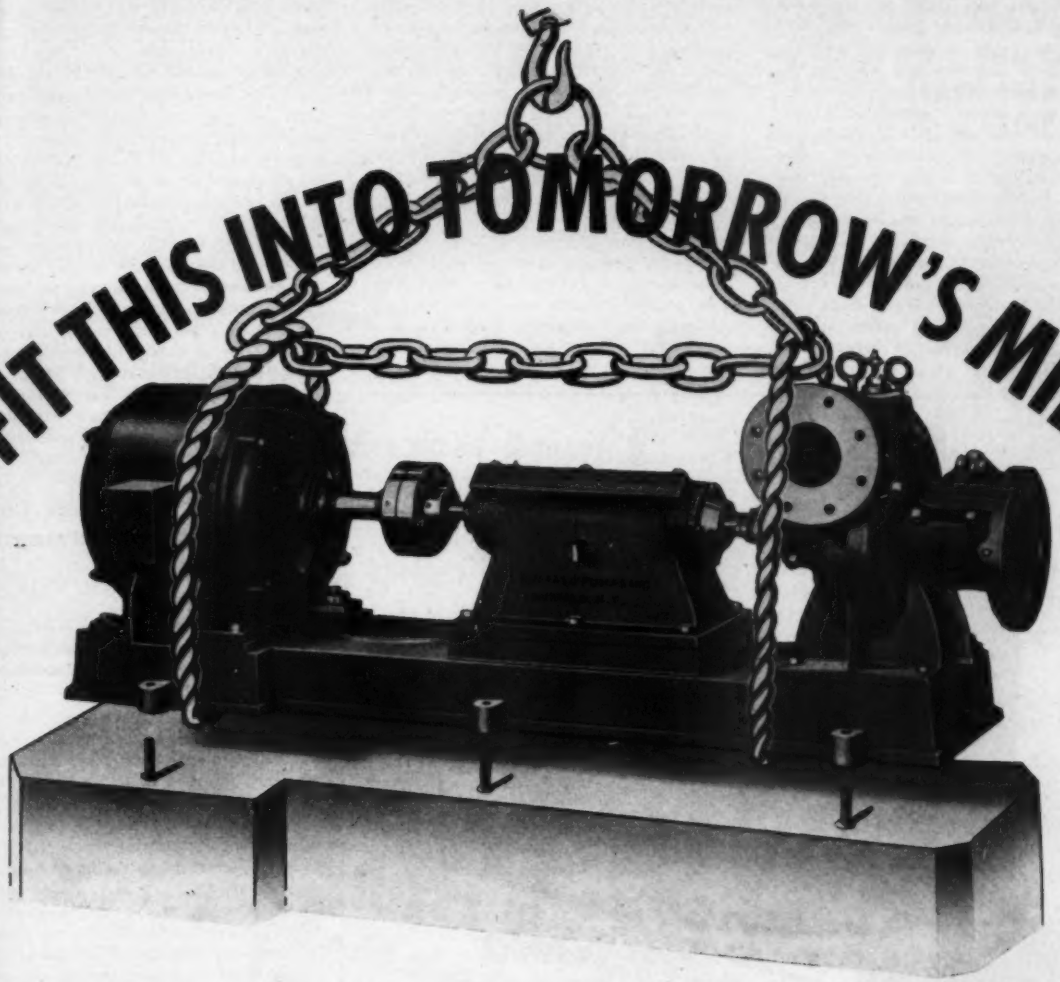
Contract awards are made on the basis of many considerations, some of which are as follows: Sample submitted, delivery capability, price, War Manpower Commission labor area, adjacency of supplier to delivery point, previous performance, availability of auxiliary materials such as containers, etc. Naturally, each award must be considered on its own merits, since the only constant factors are perhaps quantity and delivery point.

Prior to drafting the contract or purchase order, a telegraphic or written notice of award is made. This constitutes full authority to proceed with production on the basis of the sample submitted and approved. The time of delivery runs from the date of this award. Under normal conditions, you should receive the formal papers within a week to ten days. You will better understand this delay when you realize that the Bureau as a whole issues from 200 to 300 contracts each day.

The contract or order is now operating in agreement with the terms reached at the time of negotiation. Let us now suppose that you have produced a carload of material. What formal release from the designated Inspector of Naval Material is required? Get in touch with him and ask him to call and draw official samples in accordance with the inspection clause in your contract. The samples will be forwarded by air or regular mail (whichever is more expedient) to the Naval Clothing Depot for test in accordance with the sample which you originally submitted and applicable specifications. Release will be given the Inspector by teletype or wire. If 48-hour service is possible for release of material manufactured on the West Coast, certainly the mills further east should experience no hardship from this procedure. If, for any reason, the standard inspection does not suit your operation, then get in touch with us in Washington or the officers in Brooklyn, and between us we will tailor it to suit you.

Here is a question many of you have asked us lately, "What if we have a contract running for a three month period, and during the last month we are allotted a grade of pulp which makes it absolutely impossible to produce a sheet equal to the sample originally submitted?" Any sheet submitted for test during the course of a contract will be the subject of a four-way arbitration, if it does not measure up to the original sample. Brooklyn will notify us and we will get in touch with you to ask the reason. If you claim that the pulp is at fault, it is a simple matter for us to check with the WPB pulp allocation division, and be informed as to whose and what type of pulp you received during a given month. Assuming that our findings agree with yours, the shipment will be released immediately. We sincerely believe that the currently operating inspection system is the only feasible instrument for controlling the items

FIT THIS INTO TOMORROW'S MILL



If your plans for a new paper mill are taking form . . . or if contemplated alterations in your present layout are getting nearer—then, now is the logical time to call in Buffalo Pump engineers. Settle pumping problems *before* installation, and eliminate "headaches" in years to come . . . There are a wide range of Buffalo designs—the right pump for each specific application: Buffalo Pumps for delivery of high consistency stocks against high heads . . . special alloy pumps for corrosive liquids . . . boiler feed pumps . . . general service pumps. Buffalo engineering service is geared to serve your post-war preparations NOW. Write:

BUFFALO PUMPS, INC.

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"Buffalo" PAPER STOCK PUMPS

purchased—especially when manufacturing conditions vary almost daily. Not only that, but the vastly overcrowded receiving activities need not take the effort to inspect goods before taking them into stock. Furthermore, a central control gives us uniform quality, and affords the opportunity of maintaining an accurate delivery status on each contract. I might also add that it gives producers more latitude than would be the case were the test results not being reviewed by persons who are up to the minute on frequently changing WPB restrictions and limitation orders.

Many mills are worried about the seemingly arbitrary stand taken by the Armed Forces with respect to shipping containers. As to the gross weight limitation imposed for paper products, suffice to say that paper is being received under conditions which you can well understand if you have female labor in your finishing and shipping departments. Lifting equipment is scarce in a scene of warehouse expansion and it is impossible to expect personnel to handle the proverbial 300 pound nailed wood case. The availability of fiber containers, whether V-board or domestic, is quite another question. We stand ready at all times to help you get containers, either with industry or WPB cooperation. I believe those who have been assisted to date will agree we have met with fairly consistent success.

I would like to make it clear that to date there are no priorities covering the production of paper. I believe a good many people in the industry do not realize this fact.

It would be difficult, not to say impossible, to cover every sort of problem that might confront you during the course of performing a Navy paper contract. The situations are as many and as varied as the number of items we buy and the number of producers from whom we buy. What I want you to realize is that the responsibility for all contingencies which arise is at the moment in the hands of a single section in the Bureau of Supplies and Accounts. During the evolution of the present paper procurement procedure in the Navy, I would like to extend our appreciation to those members of the War Production Board who have given their time and help so unstintingly, and also to the industry itself for its understanding co-operation.

Paper and Container Conservation and Reclamation Within the Navy Department

FREDERICK C. BARBER

Container Section of the Office of Procurement and Materials, Navy Department, Washington, D. C.

Through many contacts with the War Production Board, as well as the container and paper industry, the Navy Department constantly keeps in contact with the supply situation in the container field, and at present is seriously concerned with the tight situation of containers of all types. In trying to aid in the spreading of the supply that is available, the Navy has been, and continues to be, as co-operative in all container conservation and re-use programs as has been feasible. There are several broad fields in which the efforts of the Navy have been affected.

One such field includes the simplification of container designs in all instances where it has been found practicable through the experience of inspectors at ports of embarkation and through field inspections by personnel sent overseas to the active war fronts.

Every effort is being made within the Navy Department to break down the packing of specific items as completely as possible, so that only the packing materials are used that are absolutely essential for the shipping conditions and hazards that will be encountered by that particular item.

An example of the results being obtained in this field is that in practically all packing specifications now being issued or revised in the Navy Department, an entirely different type of packing method is specified for domestic shipment than is specified for export. Should it unexpectedly become necessary to ship some of the domestic packed materials overseas, they can be over-packed, if it is not possible to obtain regular export packed materials to meet a shipping date.

Through observations of some of our personnel recently sent to the active war fronts, it now is possible for the Navy Department to co-operate with the fibre box industry in the effort to eliminate the sleeve

There is a Lot of "KNOW-HOW" Built into These Pumps

The new Ingersoll-Rand vertical stock pump is built to meet the exacting requirements of the paper industry.

The pump is simple and all parts are accessible. It can be completely dismantled without disturbing the discharge piping.

Flow of stock to the pump is downward and directly into the impeller. A heavy renewable shroud permits the restoration of the original pump efficiency after prolonged service.

These features and the fact that the pump requires little floor space mean real savings.

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No valve stems, springs or other parts to break up flow

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CASH STANDARD
Streamlined PRESSURE **REDUCING VALVE** TYPE 1000

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Trouble-free service
Smooth operation
Tight closure
Accurate regulation
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Constant delivery pressure
No spoilage
Maintenance needs practically zero
Speedier production results
Cost-saving operation

CASH STANDARD CONTROLS.. VALVES

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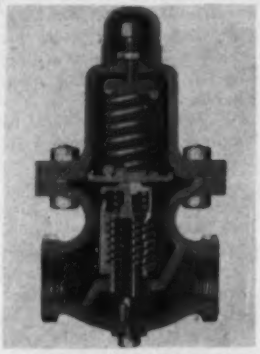
DECATUR, ILLINOIS

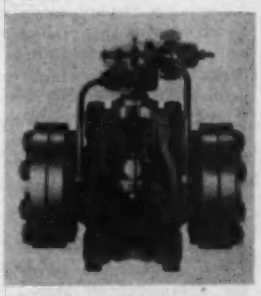
OTHER VALVES *from the* CASH STANDARD LINE



Cash Standard Type 4190 Valve; holds constant back pressure on inlet side regardless of variation in outlet pressure or changes in load. A multiport, large capacity valve. Used on suction line in refrigeration practice. Also as bypass valve for oil pumps.

Iron or bronze bodies; iron trim. Screwed ends ½" to 2"; flanged ends 2" to 6".

In automatic liquid level work, Cash Standard controls: (1) to hold the level within the closest kind of limits; (2) to do it dependably. In the cut above, a Type 100-L Controller operates a 12" Balanced Valve regulating liquid supply to a large tank. It is pilot actuated for sensitivity. It has operating power to spare — for any size Valve, however large.



Cash Standard Type 10 Pressure Reducing and Regulating Valve —self-contained, pilot operated. For holding reduced pressure within extremely close limits.

Sizes: 2" to 12" inclusive. Highest initial pressure 600 lbs.; highest reduced pressure 250 lbs. For use with water, air, Freon, ammonia; or with any non-corrosive gas or oil. Valve operating fluid not wasted; it discharges to outlet pipe. Bodies: iron, bronze, steel. Trims: iron, bronze, stainless steel, monel.

on "V" boxes from all but those boxes that will encounter the most severe shipping hazards—in particular those of landing operations and the most forward bases. These observers also have found that, for most of the shipments now being made in V-1 boxes (made primarily of 100 per cent kraft), V-2 boxes (making a greater use of waste paper), will perform satisfactorily. The results of these observations already are producing savings in the fibre box industry.

Another field in which the Navy Department is actively engaged in making every effort at conservation of critical materials is the re-use of containers and packing materials. Here the fiber box seems to give the most flexibility, due to the ease of opening and the fact that it can be collapsed and bundled for re-shipping to the original contractor for re-use. The majority of wooden boxes do not lend themselves readily to re-use by the original contractor, due to the wasteful use of shipping space necessary for their return. However, some worth-while progress is being made in the field of collapsible wood boxes for such items as airplane engines, etc. In addition, the Navy Department is making every effort to see that empty wooden boxes, barrels, crates, etc., are maide available to the public in the communities adjoining Navy activities, and in many instances these containers are being put to use to ship items commonly referred to as less essential than war materials. This helps to relieve some of the pressure on new boxes of all types.

A typical example of the re-use of containers by the Navy is that of the fibre boxes for shipping TNT. Every depot has been instructed to carefully open each box so that the flaps are not destroyed. After the contents have been removed the boxes are flattened and bundled for return to the original contractor. These containers are closed by the use of gummed tape and steel strapping, so that the only deterioration of the box is through wear and tear in shipping. Many of these boxes have as many as five or six round trips. Those boxes that are stored for long periods in ammunition dumps that may be humid and damp obviously do not make as many trips as the ones which encounter more favorable conditions. The depots are further instructed not to discard or destroy these containers even when they are no longer serviceable. They are then bundled or baled and sent on their way back to a paper board mill.

This brings us to another field of paper and container conservation in which the Navy is taking an active part. This is the salvage of all available waste paper at the many Navy activities.

In one typical instance, a recent survey of a large activity showed that approximately forty to fifty tons per day of waste paper could be collected, the main part of which consisted of old containers. At this activity two fair sized buildings have been constructed, each containing a large paper baler. These are now in operation sorting and baling this waste paper, and routing it back to paper board mills.

Another field in which the Navy has been active in conserving pulp and paper is that of being constantly on the alert for instances in which a grade of paper using less critical types of pulp or other materials might satisfactorily be substituted for one using highly critical pulps. For example, several grades of rag and sulphite mimeograph papers have recently been replaced by groundwood sheets; memorandum pads of 100 per cent chemical wood pulp have been replaced by groundwood grades; number 3 grade pressboard file holders are now being used in place of number 2 grade; and lens wiping tissue has been developed that makes unnecessary the use of Japanese hemp or number 1 manila rope fibre; and at present trials are being conducted to determine the possibilities of a temporary or shop blueprint sheet manufactured primarily from waste paper. This latter sheet would be a substitute for the present 50 per cent rag—50 per cent sulphite blueprint sheet.

In still another field, a great deal of work is being carried on at present to reduce the number of sizes and styles of containers particularly for packing clothing items.

What the Quartermaster Corps Expects from Paper Products

MAJOR ROBERT R. MELSON, Q. M. C.
Quartermaster Corps Subsistence Research Laboratory (Chicago)

A year ago at the fall meeting of the Technical Association of the Pulp and Paper Industry, I was privileged to present to the paper industry ten problems that were facing the packaging group of the Quartermaster Corps.

The first problem concerned weatherproof solid fiber boxes and the development of watertight shipping cases. The requirement of watertight shipping cases has been largely met by the use of watertight unit packages inside the case and by using watertight case liners in the form of bags.

The second problem was that of producing satisfactory water-vapor resistant sheets. During the last twelve months, we have investigated a large number of new films, mostly of the laminated type. We have not, as yet, reached our objective in moisture protective films, but they have been substantially improved. The biggest development in this field has been with materials which lend themselves to conversion into large bags.

The third problem was related to the protection of food against infestation by insects. Up to the present time, we do not have available a flexible packaging material which we feel is proof against insect infestation. Considerable work is being done along this line by the Massachusetts Institute of Technology, the Department of Agriculture, and the University of California. The Cadelle *(Tenebroides mauritanicus)* seems to be the most difficult insect to stop and unfortunately it is well distributed throughout the theaters of military operations. This insect bores for sheer pleasure and, although it may not materially damage the food itself, the hole produced provides a method of entry for other insects. The Cadelle readily eats through wood, foil, asphalt laminated bags, wax impregnated board, etc. Recently very encouraging results have been obtained by incorporating a ply of sand paper in the board from which the cartons are made.

The fourth project which was presented was that of packaging dried fruit. At that time the problem was to hold dried fruit having a moisture content of approximately 22 per cent. Protection from loss or gain of moisture, mold growth and insect infestation were required. These difficulties have been partially overcome by further reducing the moisture content of the dried fruit to approximately 12 per cent. This greatly reduces the likelihood of mold growth. It was also necessary to choose a type of package that could be adapted to commercial production lines. At the present time, this extra dry fruit is being packed in an "arsenal" type fiber box which is wax impregnated and coated after sealing. This carton has a fairly large opening compared to its depth and its filling lends itself quite well to dried fruit packing lines. Although the wax impregnated and coated board is not proof against insect infestation, it is moderately resistant as compared with previous packs.

The fifth topic considered was that of obtaining a wax paper sheet which was flexible at 20 degrees Fahr. below zero and not excessively tacky at 130 degrees Fahr. Comparatively little progress has been made in this direction.

The sixth point covered was that of waterproof as well as water-vapor-resistant papers. In the past year great progress has been made in the production and especially in the use of these types of papers. Our specifications today embody three types of watertight and water-vapor-resistant bags which have greatly improved the Quartermaster Corps overseas packages. Advancement has been made in durability, flexibility, sealing and waterproofness.

The seventh problem was in expectation of being required to package lard and other shortenings in flexible packaging materials. Some interesting work has been done along these lines and a promising pack has been developed. However, up to date, all aspects of the problem have not been completely solved and, in the meantime, the metal containers will continue to be used.

The eighth problem was that of prevention of the transfer of oxygen through flexible packaging materials. This was in anticipation of requirements which did not develop, and, due to more pressing problems, as far as is known, very little work has been done on it.

The ninth project concerned composite fiber cans with particular reference to improvement in the water-vapor protection of the body and the tightness of the end seams. Water-vapor protection of fiber cans has been materially increased by including more and better water-vapor resistant materials in the body and, in one instance, by including a lead foil in the plies forming the can body. It has been found that end seams can be made more securely watertight by treating the ends of the body with amorphous wax before seaming on the top and bottom, or by using a suitably treated outer water resistant liner.

The final problem presented last year

His book DOESN'T tell ALL

REX Mechanical Engineering—Rex M. E.—designs and manufactures more than 2000 *standard* types and sizes of chain belts.

His 768-page catalog does not include the many special chain belts and adaptations which Rex M. E. has been, and is, designing and producing for machine designers and maintenance engineers in the paper industry.

Where corrosion was the problem, Rex M. E. recommended a special chain belt of Z-Metal. Standard chain belt might have been satisfactory for a time, but the special application was sure to give far longer and more efficient service.

When a chain belt with a 200-ton pull and an ultimate strength of 1,500,000 pounds was needed, Rex M. E. designed and produced it.

For a continuously operating drive requiring speed beyond the highest standard range, he provided "step-up" improvements in an otherwise standard chain belt.

For an exceedingly complex machine in which the space limitations were an important factor, he collaborated with the designer to work out a special chain belt installation, meeting every requirement of design and service.

For this service, Rex M. E. maintains a field organization. Many of its members served their apprenticeship in his drafting rooms and plants. For additional counsel the territorial men call on designing engineers in Milwaukee who have the advantages of national experience.

Through the work of all these men in many fields, Rex M. E. is constantly learning—and making available—much that is helpful in the great work in which all engineers are always engaged, namely, to achieve a maximal result at minimal cost and waste.

For complete information, see your Rex Man or write Chain Belt Company, 1717 W. Bruce Street, Milwaukee, Wis.

REX **CHAIN BELTS**

In more than 2000 sizes and types for transmitting power, timing operations, and handling materials

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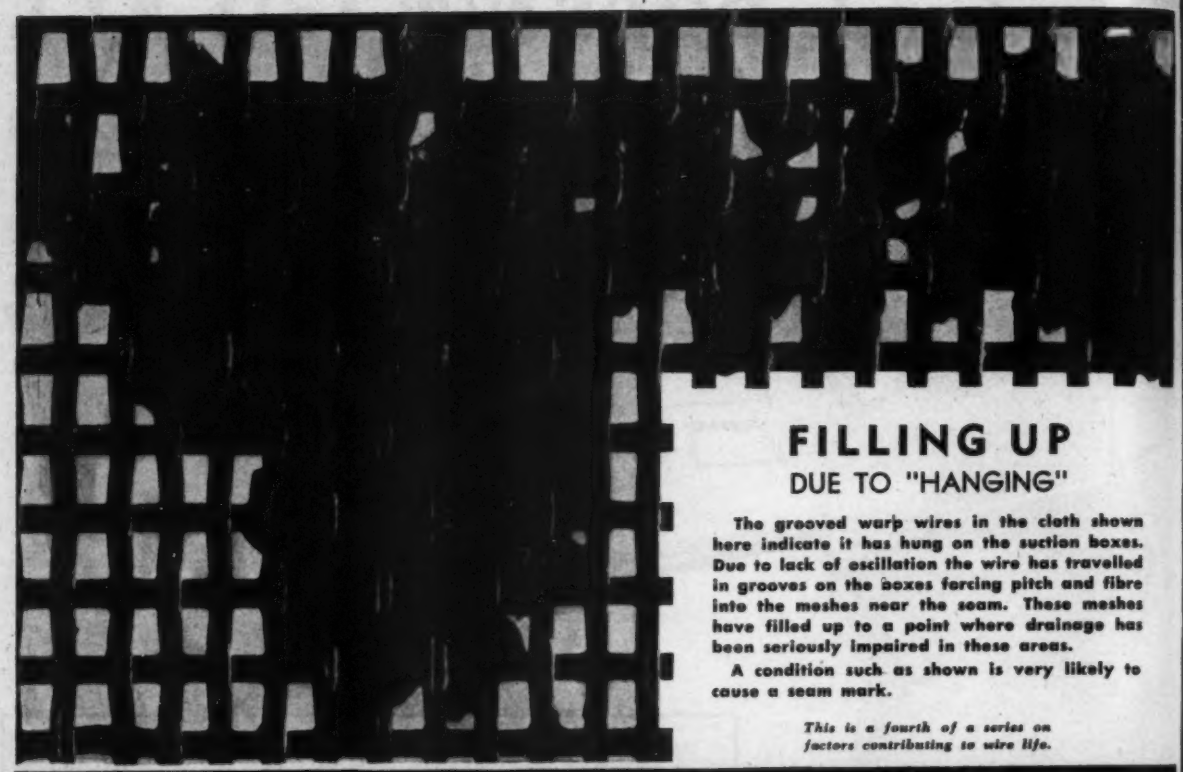


FILLING UP
DUE TO "HANGING"

The grooved warp wires in the cloth shown here indicate it has hung on the suction boxes. Due to lack of oscillation the wire has travelled in grooves on the boxes forcing pitch and fibre into the meshes near the seam. These meshes have filled up to a point where drainage has been seriously impaired in these areas.

A condition such as shown is very likely to cause a seam mark.

This is a fourth of a series on factors contributing to wire life.

Appleton Wire Works, Inc. Appleton, Wis.

was that of securing shipping cases which were proof against damage by rats. This subject has been considered, but little progress made, due to its difficult nature. However, investigation has recently been stimulated and work is being carried on with the Wild Life Research Laboratory of the U. S. Department of Interior.

From this brief resumè, it is evident that some of the problems have been solved, part have been circumvented and a portion of them still confront us. The improvements and gains made during the past year in Quartermaster Corps packaging could not have been accomplished without the wholehearted co-operation of the members of the Technical Association of the Pulp and Paper Industry. However, much work still lies ahead.

During the last twelve months numerous new problems have arisen. Some of these have already been solved; others are still at hand. Essentially, we are faced with the same basic problems as last year—that of packaging hygroscopic food products so that they can be shipped to all parts of the world to feed American fighting men.

In the last few months the packaging of cereals has been redesigned for greater water-vapor protection and mechanical strength. These packs were designed to use what are substantially domestic unit packages, with the necessary overseas water-vapor protection provided by means of a single large laminated bag that incloses a number of unit cartons. This permits the maximum use of present packaging machinery and also the most economical uses of suitable overseas type packaging and packing materials since, as far as the laminated bag is concerned, it is a bulk pack.

The laminated bags being used for this purpose and for similar packs on dehydrated soups and vegetables consist of creped-kraft paper laminated to creped-kraft paper using large amounts of asphaltic type compounds. These bags may be of two or three plies in thickness and the basic weight of the kraft paper and the amount of asphalt laminating agent may vary. The size of the bag, weight of the contents and the water-vapor protection required, control these variables. The kraft paper may be creped in one or both directions depending on the particular requirement. The bags manufactured of these materials are closed preferably by means of a pressure sensitive strip of sealing agent applied around the mouth of the bag.

At the present time, the supply of these bags is very limited. The Quartermaster Corps expects to use a large number of them in packaging a number of foodstuffs and more suppliers are needed.

The multiple functions of these laminated bags require that they have the following physical characteristics:

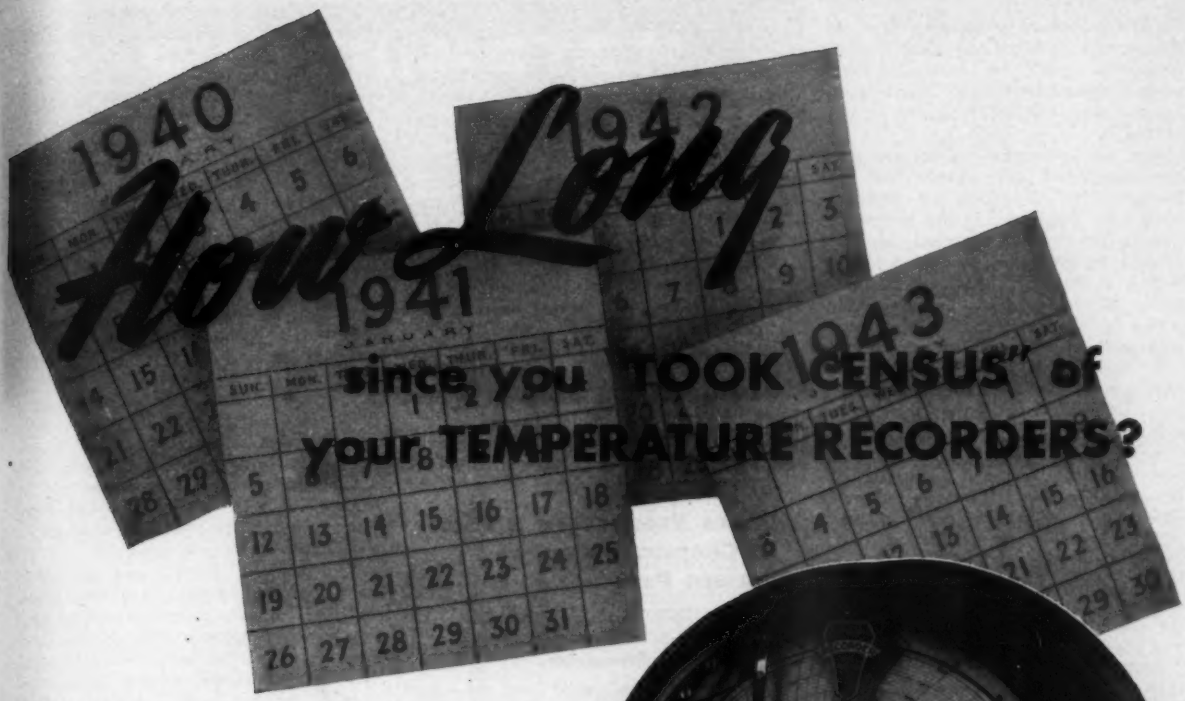
The bag must provide a watertight barrier. A high degree of resistance to the penetration of water vapor is also necessary.

In order to withstand mechanical abuse the bag must be pliable, especially at low temperatures. It must conform to the eight sharp corners of a shipping case and retain its functional qualities under the severe handling conditions of war time transportation through extreme temperature variations. In addition to being able to be stretched, the bag must have a high degree of strength and durability, because it will be required to enclose an average load of 45 pounds.

The method of closing the bag must be adaptable to many production lines without the addition of expensive equipment. The final closure must, of course, be waterproof and stand abuse as well as does the bag itself.

Because it is impossible to predetermine the storage life of a package, all the materials used must be odorless so as to preclude contamination of the food, even at high air temperatures.

In connection with this subject, it has been very difficult to obtain an asphaltic laminating agent that is odorless and sufficiently flexible at low temperatures. Considerable improvement has been made over the asphalt commonly used in waterproof paper but we are still badly in need of a better product. When we ask for waterproof paper complying with Federal Specifications UU-P-271, "Paper, Kraft, Wrapping, Waterproof," we have made an exception to the bleeding test and reduced the temperature for this test from 180 degrees Fahr. to 145 degrees Fahr. This will permit an asphalt with a correspondingly lower plasticity range. We can do this safely because, unlike many other uses, subsistence items invariably have protection against damage caused by slight bleed-



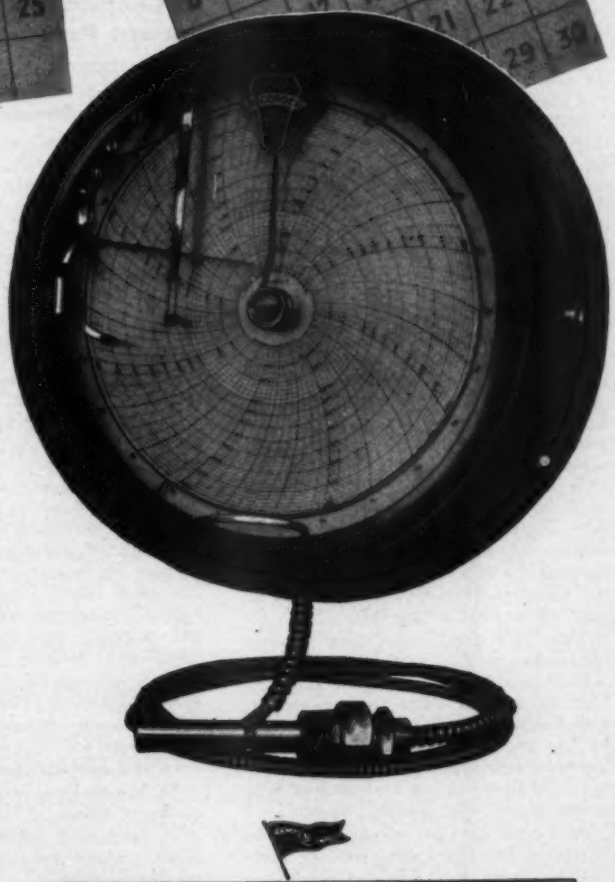
Now's the time to check up whether you've been overlooking important installations

Have you had a chance since pre-war days to survey your whole plant set-up with a view to getting *all the help you can* from Temperature Recorders? If not, you may be surprised to find how much your overall production can be improved by equipping a few neglected points with Foxboro Temperature Recorders

These precision-engineered instruments give unerring guidance that eliminates any need for guesswork in controlling critical temperatures. Their ultra-sensitive thermal system reacts to slightest changes . . . their light, strong recording mechanism "writes it down," instantly and continuously, without loss of accuracy.

No matter what step in your operation demands uniform temperature, Foxboro Temperature Recorders will automatically give you the exact information to save quality-variations, spoilage, re-runs and lags in output.

Why not make a list *right now* of the trouble-spots that Foxboro Temperature Recorders might eliminate once and for all? Write for detailed Bulletin 198-2. The Foxboro Company, 158 Neponset Avenue, Foxboro, Massachusetts, U. S. A.



TEMPERATURE RECORDERS
by
FOXBORO
REG. U. S. PAT. OFF.

ing of the laminant in the outer bag. Although we have talked only about asphaltic laminating agents for waterproof bags, other combinations of materials accomplishing the same end will certainly be considered.

Last year we mentioned the use of a wax-impregnated and coated-carton that Ordnance had developed for packaging small arms munition. In the past twelve months, this type of packaging has been adapted to the Mountain Ration, Jungle Ration, K Ration, 5-in-1 Ration, 10-in-1 Ration, Flight Lunch and dehydrated evaporated fruits. We feel that this type of package has been very successful and has filled a substantial gap in Quartermaster Corps packaging requirements. From a pulp and paper standpoint, the interest in this package lies in the furnish of the "arsenal" type board. It is manufactured with a high percentage of corrugated clippings, well sized to prevent excessive water pick up and fabricated to a density that permits the required wax penetration.

The application of this type of packaging indicates that an increasing amount of this grade of board will be used and the expansion of mill capacity to produce this board is highly desirable.

Certain types of round composite fiber cans are used for packaging dessert powder, cocoa, cocoa beverage powder, hard candy, baking powder and similar products. Although many of these cans have been used, their popularity has been decreasing because of the tendency of the can body to become disengaged from the metal ends. Attention is being paid both to rectangular composite fiber cans and bag-in-carton types of packages to replace these.

The unit package of certain dehydrated soup and cereal packages and of Whole Wheat Biscuits, C Square Biscuits and Salt Tablets may be wax-paper wrapped. Considerable difficulty has been encountered with tearing and puncturing at the corners. The ruggedness of wax papers over the whole temperature range needs improvement. Paper of a heavier basis weight, the use of kraft paper and the development of laminated sheets represent the efforts to improve this type of material. More ideas are needed.

There is a gap in satisfactory packages for holding products in the range of from 5 to 10 pounds. The package should combine the required water vapor protection, and durability in its own liners, wrapper or bag and should lend itself to rapid assembly, filling and closing The obtaining of a tight seal on a production basis is one of the most difficult problems.

At the present time, we are successfully packaging dehydrated white potatoes, sweet potatoes, beets, and rutabagas in flexible packaging materials. Little, if any, work has been done up to this time on gas packing in flexible packages. Although it is not a particularly pressing problem today, we would like to accumulate some information on the use of flexible packages for inert gas packing.

You will not in examining the more recent Quartermaster Corps specifications that performance requirements are being included in many instances. By the use of performance specifications, we hope to be able in the future to permit greater flexibility in the employment of available materials. Such a course would, undoubtedly, stimulate both the packer and the manufacturer of packaging materials to continue with aggressive development work.

Do not by any means think that the packaging of Quartermaster Corps items has reached the ultimate stage of development. Conditions under which this packaging must perform are inconceivably bad. Recent pictorial reports from the South Pacific theater of operations portray unavoidable conditions almost beyond description. Military packaging must be improved and must continue to receive the unqualified support of the pulp and paper industry. As the research efforts of the pulp and paper industry pass through the laboratory stages and become commercially practical, please tell your story to the Packaging Section of the Quartermaster Corps.

Paper Products as a Factor in Chemical Warfare Service Packaging

Lt. THEODORE P. STEINMETZ
Technical Command, Edgewood Arsenal, Md.

Except for a few special items, Chemical Warfare Service packing and packaging problems do not differ from those of the other services. Our packing involves more than 1800 items, including components which go into end items. Weights vary from an ounce in the case of ignition cartridges up to 21 tons for an impregnating plant. Included is some delicate fragile apparatus such as comprise our new M2 Field Laboratory.

Products of the paper and pulp industry backed by the co-operation of individual manufacturers, have been invaluable to this service. Consequently, our present problem is not with paper products, but with outside shipping containers. In order to survive rough handling incident to overseas shipment, the outside container must be of substantial wood construction.

Paper and related products are used by this service mainly for interior packing and individual protection of material, munitions and supplies. This interior packing involves the following paper products:

1) Waterproof paper liners and bags for our wooden shipping containers.

2) Grease proof paper for parts and surfaces treated with rust inhibiting oils.

3) Moisture and vapor proof bags.

4) Various types of asphalt impregnated laminated cylindrical containers.

5) Corrugated and solid fiberboard for cartons which are then overpacked in wooden containers.

6) Cushioning materials ranging from corrugated fiberboard to cellulose wadding.

7) Waste paper in the form of shredded or wadded newsprint.

8) Asphalt impregnated roofing paper for fully sheathed crates.

Our new field laboratory uses all the foregoing products. Others such as our various types of grenades and smoke pots use only two.

In connection with this packing it is of interest to note that at Edgewood Arsenal we operate a packing section of the Engineering Division of the Technical Command. This section is charged with full responsibility for all C. W. S. packaging and packing design. Packing is engineered to afford complete protection to the item being packed. We do not need "sales appeal." Our first consideration is "Will the item reach a theatre of operations undamaged"? The answer is found by thorough rough handling tests of a package to the point of destruction. Through such testing we have arrived at certain minimum requirements which a package must meet before it is standardized and placed in our specifications. Laboratory facilities are maintained for such testing.

One type of test is to rough handle a package to determine its inherent strength. Another type has been developed to test interior packing of a container. Some such testing follows procedures developed by Forest Products Laboratory at Madison, Wisconsin. Other tests were developed by industry or by this service.

Unfortunately, when a new package is developed, it is frequently months before it is placed in service. A new specified packing is applicable only to new contracts consummated under the new specifications. To overcome this lag between newly developed packing and its ultimate use, a policy has recently been initiated to make all packing changes mandatory and applicable to existing contracts, and to stocks at depots and arsenals. The procurement districts are then required to renegotiate existing contracts to provide for the new packing. Thus we have had to "follow through" on our packing and not merely put it in a specification and feel we have solved a problem.

With the above background information out of the way, I shall now discuss briefly specific applications of the paper products previously mentioned and problems we have encountered and are still encountering.

1) **Waterproof Paper:** Our most important use of this paper is for box liners. We use a 30-30-30 asphalt laminated sheet meeting the requirements of Federal Specification UU-P-271. It is usually procured fabricated into a bag of the correct size for the particular box in which it will be used. These liners have been found to give satisfactory protection to an item during outdoor exposure. They represent our first barrier against the entrance of moisture. However, we have yet to secure a liner that will give complete protection if the box is submerged in water for 24 hours.

As paper, the liner will meet specification tests for 24 hour water resistance. Such tests, however, do not correspond to actual submergence of a box of munitions lined with the paper and properly sealed. These liners do, however, withstand short periods of immersion such as may be encountered during amphibious operations, in addition to protection against the elements during outdoor storage.

As mentioned, they are a first barrier. Whenever feasible, we endeavor to provide additional barriers in this respect. The lined box usually contains several unit packages of an item, as for example 10 fiberboard cartons each containing one gas mask. These fiberboard cartons are moi-

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ture resistant, but as with the paper, will not stand a long period of immersion. They act as a second barrier.

For a third barrier, we use a moisture vapor proof bag around the gas mask carrier. That type of package has survived more than 24 hours submergence in salt water. Although the cartons were saturated, water did not reach the masks. Recently we have found these box liners necessary to protect interior fiberboard packing against moisture resulting from the use of green lumber in box construction.

The use of liners brings in the problem of protecting the liner against the contents that the liner is supposed to protect. These liners are easily worn through if the contents of the box is harder than the liner. For example, our smoke pots which are large cans, quickly abrade through a liner during shipment. This difficulty is overcome by using double faced corrugated fiberboard on all interior faces of the box. Special liner protection is not necessary when an item is packed in a fiberboard interior packing box, as is the case with service gas masks. The fiberboard box protects the liner against abrasion.

When the interior arrangements of bracing for an irregular shaped item is such that it is not practical to use a waterproof liner, our technique consists of wrapping and sealing those parts of an item that can be damaged by moisture. For example, we are bringing out a new packing for our 4.2 inch chemical mortar. The barrel with accessories fits into various compartments and irregularly shaped spacers within the wood box. The exterior of the barrel is adequately protected against corrosion by paint The only point of entrance is through the muzzle. After the rifling has been treated with a rust inhibitor lubricant, the muzzle is wrapped in greaseproof paper and covered with a water resistant muzzle cover. Over that there is fitted a waterproof bag which is sealed to the barrel with 3 wraps of waterproof adhesive tape. The various accessories and tool rolls are each treated against corrosion and either wrapped in the waterproof paper, sealed with marine glue, or placed in small waterproof bags. The various components are then placed in their proper compartments within the box.

We realize that it is possible to increase resistance to entrance of moisture by using a better grade of waterproof paper as a first barrier. However, the better grades are difficult to obtain. If we specify them as part of our packing, we finally wind up granting a contractor a waiver permitting him to use a grade C or D paper from Federal Specification UU-P-271.

2) Greaseproof Paper: It is a fallacy to specify a waterproof box liner and then believe you have done your job. While such a liner is reasonably resistant to the entrance of water for a limited period, it is not vapor proof. Therefore the humidity within a package will correspond to conditions outside of the container. If this humidity exceeds 20%, corrosion of unpainted ferrous surfaces usually results. Consequently, such surfaces must be thoroughly cleaned and then protected with oils and greases containing rust inhibitor agents. To keep the oil or grease on the part treated, we use greaseproof paper. If the part is small, it is then further wrapped in waterproof paper or a bag, giving a second water barrier. For example, the tool kits in our Maintenance Company sets and Field Laboratories are treated in this manner and each tool wrapped in greaseproof paper.

3) Moisture and Vapor proof Bags: These are not used by C. W. S. for inhibiting corrosion as they are necessary in connection with silica gel for packaging items which cannot be treated safely with rust inhibitors. Our important use of these bags is as a moisture and waterproof barrier for service gas masks. They are also used for individual booklets of liquid vesicant detector paper, and for gas mask canisters with special fillings which are extremely moisture absorbent. As such items are small, we find that if properly sealed silica gel protection is not required. There is no corrosion problem with these items. The bags act as adequate vapor barriers and in addition are another water barrier.

4) Asphalt Laminated Cylindrical Containers: These are excellent water barriers comparable to hermetically sealed cans. Some of these containers are also made vapor proof for special canisters by using 30 pound kraft for the final layer and dipping the sealed container in either micronized or paraffin wax.

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A typical individual container is that used for the 4.2-in. chemical mortar shell. It comprises an inner and outer convolutely wound tube. The inner tube is fabricated with a minimum of three layers/of paper starting with a layer of .01-in. waterproof wood Manila paper on the inside followed by a layer of .025-in. asphalt impregnated kraft. Outside layer is .031-in. asphalt filled waterproof chipboard. The outer tube consists of four layers as follows

1—Inner layer of .031-in. asphalt filled chipboard.

2—Layers of .007-in. waterproof duplex kraft wrapping paper.

3—Outside layer of .004-in. asphalt impregnated kraft cemented to the previous layer with asphalt.

If assembled container is to be wax dipped, the final layer consists of 40 pound kraft. Container ends are 30 gauge sheet steel electrolytically zinc coated and flanged for roller crimping together with a sheet steel retainer. These are roll crimped to container ends.

A similar type of container procured under U. S. Army specification 50-61-3B and in conformance with C. W. S. drawings is used for grenates.

5) Fiberboard Containers: Double faced corrugated fiberboard containers are extensively used for interior packing. The number of individual items per container is usually determined by the basis of issue. These containers require protection against moisture and therefore may be individually wrapped and sealed in waterproof paper before packing in a nailed wooden box, or the box liner relied upon for this protection.

6) Cushioning Materials: Corrugated fiberboard used for interlocking separators and box liners to secure tight packing and protection of waterproof liners. Fragile articles are wrapped in extension wrappers and may then be further separated from adjacent items with cellulose wadding.

7) Waste Paper: Shredded newsprint has been found valuable as a shock absorbent for interior packing.

An interesting instance is a new packing for the C. W. S. instructional gas identification set. After numerous changes the pack finally standardized is to wrap each bottle in cellulose wadding, lapping it over the top and bottom. Three bottles are then firmly packed in shredded news in a gallon size can and two cans packed in a wooden box. Not only does this pack survive our interior packing tests, but when rough handling the exterior wood box until destroyed, the bottles are not broken.

An example of packing involving all types of paper products is the C. W. S. new Field Laboratory, M2, now being supplied to the Laboratory Companies in the field. To eliminate a large number of assorted size containers, a cleated plywood shipping box having an interior volume of 22 cubic feet was designed and standardized. Thirty of these containers and four crates comprise the entire laboratory.

An unusual feature is that after a laboratory is unpacked, the shipping box is used as a laboratory table and cabinet. Each box is 4 feet long, so when unpacked, each laboratory has 120 linear feet of laboratory space two feet in width and a similar amount of shelf space.

For interior packing, two sizes of corrugated slotted type fiberboard boxes were procured—a small size for small glass items and reagents, and a large one for other equipment and reagents.

Each carton is packed with several items, each of which is individually wrapped in an extension wrapper. Excelsior is then used liberally between items as a shock absorbent. When the contents are subject to moisture damage, these cartons are wrapped with waterproof paper. Items subject to corrosion are treated with rust inhibitor oil and wrapped in greaseproof paper before being packed in cartons. Each carton is numbered to key it to its plywood shipping box and a master packing list.

Our biggest problem was an analytical balance with glass sides. For this there was developed a floating pack comprising 2-shock absorbent barriers on all sides. This set up was placed in a corrugated carton wrapped in waterproof paper and then floated in a nailed wood box which was packed with other items in one of the laboratory shipping boxes. The balance suffered no damage or lose in sensitivity when this packing was subjected to our rough handling procedure.

All C. W. S. packing of overseas items complies with the requirements of U. S. Army specification 100-14. However, it has been found that simply inserting a clause in our specifications to require such

compliance rarely results in proper packing. Therefore, in most instances we incorporate packing diagrams together with carton and box designs in our drawings of an item. Specifications then require packing in conformance with those drawings. We find that this method eliminates misinterpretation of 100-14 by contractors and inspectors. It also assures uniform packing where several contractors are producing the same article, and enables us to exceed the minimum requirements of 100-14 when this is necessary.

Marking of Army Shipments

CAPT. G. WALLERSCHEIN

Packing and Marking Branch, Port and Field Agencies Division, Office of the Chief of Transportation

Today, for reasons of security, all Army shipments move to their oversea destinations via a prearranged system of symbols. These symbols are meaningless to most handlers of freight, but they are full of meaning to the personnel of the Transportation Corps.

Of all the markings on the container, the oversea destination is most important and should receive the prominence it deserves. And yet, the oversea reports time and again stress the fact that packages arrive with coded destinations that are either almost invisible, or buried among other marks, or partially obliterated.

Another complaint is that the box is so full of all sorts of markings that there just isn't room for any additional markings. You may wonder why that blank space is so necessary. Well, the Army shipment is not just a one-time shipment. It is rather a series of trans-shipments.

While oversea destination is by far the most important destination on the box, it is not the only necessary item.

Loading of ships and inland carriers is planned on basis of weight and cube. Therefore, it is essential that each and every box show cube and weight.

From the supply angle it is also essential that every box carry the description of its contents.

Finally, for the purpose of preliminary sorting and quick content identification, each technical service has a special color assigned to it, which is placed in a specific position on a container. This is particularly important at the oversea basis where natives cannot read, and the entire ship load must come off and be despatched within a few hours. Upon unloading, piles of material are made up of like color and hauled then to their respective depots.

So far we have touched upon the important marks—the marks that are necessary throughout the journey. To assure permanency, these marks must be stenciled or printed. To assure visibility, they must be large and legible. To assure their immediate location they are confined to one or two surfaces of the container, with the weight, cube and content marked in the upper two-thirds, and the oversea address, placed preferably on a slant, in the lower third.

All other marks, with the exception of caution marks, are necessary in the United

The "Whalers" may justly be called the "Sub-Chasers" of old. Their job called for knowledge, skill, and above all, daring. They stole up on their prey in small boats, hurled the harpoon into the mammoth whale as he surfaced for air. The whale madly thrashed about, towing the boat until tired out; then the whale-men hauled in on the line and the "mate" lanced the leviathan in a vital spot. This most dangerous and spectacular kind of big game hunting was the foundation of numerous New England fortunes.

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States only. Their utility is therefore limited. In order not to interfere with the permanent marks, they are placed upon another surface of the container and limited in area they are permitted to occupy. The consignment marks—that is the domestic shipping address (from ZYZ Co. to such and such depot, or from XYZ Co., to such and such port of embarkation) are limited to 28 sq. in. The contract data which is the information required by the Procurement officer, is limited to 42 sq. in. The contract data may include such information as contractor's name, procurement agency, contract number, date inspected and inspector's name, lot number, item number, etc.

One important don't is "advertising matter." Today, every inch of space is precious and must be preserved for subsequent application of military markings. Any brand identification therefore must be definitely confined to the space allotted to the contract data.

Comes now the question: Who has the prime responsibility for proper markings of containers? Today, time is the important element and no sooner do the supplies reach the depot than they must be reshipped. The tendency is more and more to have the supplier prepare the shipment in such a manner that no additional processing, repacking, or remarking is necessary.

The marking function of the depot is then reduced to the addition of the oversea address in the lower third of the surface reserved for permanent markings and the addition of shipping label on the domestic side of the container.

There is absolutely no reason for confusing marking patterns on the containers shipped by manufacturers. Printed specifications for marking by contractors, based upon the principles I have just outlined, are issued by each technical service. If, perchance, the contractor has not received these he should ask for them instead of injecting his own ideas. On the other hand, if subcontractor enters into the picture, who in turn may make independent shipments to Army installations, it is the duty of the prime contractor to furnish another copy of marking specifications to the subcontractor.

In view of the attempt to limit marking necessary in the Zone of Interior to small areas of 28 square inches for consignment marks and 42 square inches for contract data—the practical method for entering this information is via labels. In this connection there is a definite need for gummed labels which will adhere to various surfaces and will not be washed off when exposed to elements or easily removed through rough handling in transit.

Another problem is that of protection to be given packing lists. When contents of containers consist of mixed commodities it is necessary to limit the stenciled description on the containers and rely upon the packing list to enumerate contents in detail. Each box must stand on its own feet. The problem is to provide an absolutely waterproof envelope for the packing list and in attaching this envelope to the case to reinforce it via a cover plate that it will not come off.

The last problem is that of applying service color. The color is one of the important markings on containers but it is also one which causes manufacturers and depots considerable difficulty; paints do not dry fast enough and where conveyor system is not used, the difficulty of applying color to boxes is multiplied.

Requirements of Protective Papers for Ordnance Overseas Packaging

H. T. HOLBROOK, Packaging Staff
Field Service Division of
the Chief of Ordnance

The requirements that we have today bear only a rather remote resemblance to those that we had before Pearl Harbor so far as paper is concerned.

So far as fiber board is concerned, folding boxes and setup boxes, we do not have any great problem. We are well satisfied with the materials that your industry has developed and has made available to us. The only problem now, of course, is to get enough of them.

In regard to fiber board, we are often asked the question, "Why do we require waterproof fiber boards for inner cartons that are packed in waterproof paper lined boxes?" The answer to that is very simple —that inner fiber board carton may, somewhere along the line, before the material is put into use, be used as the outer container.

We have, as you may know, a new manual, *Corrosion-Prevention Processing and Packaging*. This manual has been accepted by all the technical services. Included in the manual are references to the specifications covering greaseproof wrappings.

We are not entirely satisfied with the requirements for Ordnance Specification ASXS Revision I for Greaseproof Wrappers. Work is being conducted at the Forest Products Laboratory in Madison, Wisconsin, and also at the Frigidaire Laboratory at Dayton, Ohio. These Laboratories are co-operating with Ordnance on all of our corrosion problems.

We have always felt that a weakness of the present specification lies in the absence of a cold test requirement. There is, as you know, no requirement for the behavior of the wrapping material at low temperatures and yet experience has shown that during handling under conditions of extreme cold, such as we might find in Russia or Alaska, certain types of paper, greaseproof wrappings, become brittle and if handled may open and then when the material is stored, perhaps in the warm warehouses there is a tendency, of course, of the preservative coating to escape through the rupture.

When we wrote AXS840, Revision I, we thought we had covered most of the angles, but that is one we missed. Another one is resistance to mold, which we are working on at the present time.

We are well satisfied to date with the greaseproof requirements in the present specifications. We have, however, run into difficulty in bags that are made of grade A type. Something must happen during the manufacture or the fabrication of the bags. We have had evidence of oil preservative leakage through the machine-made folds in greaseproof bags.

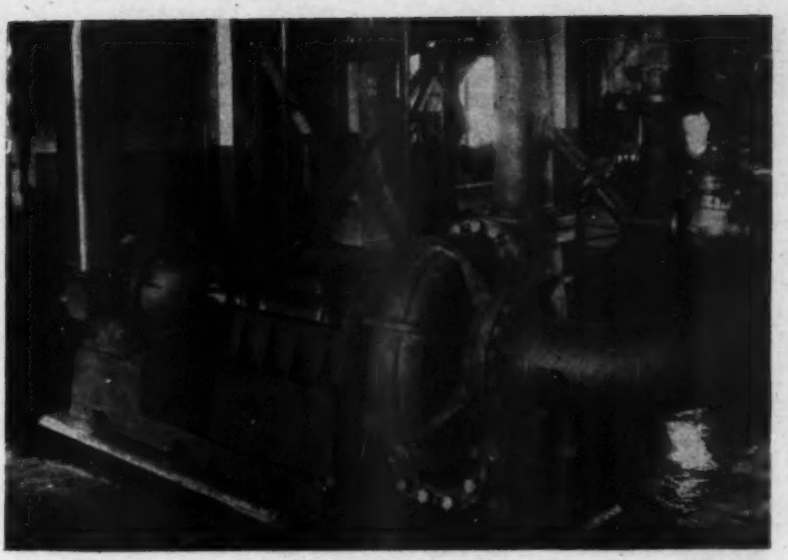
The big thing today in this greaseproof wrapping picture is the lack of sufficient materials to do the kind of a job that we need. We have a conservation measure which only eliminated the use of wax from grade A wrapping material. So far as wax is concerned, wax can only be used in the grade C type of wrapping. Some of the converters and fabricators have done a splendid job in reducing the use of micro crystalline wax.

We are very seriously considering whether we must necessarily restrict the amount of micro crystalline wax that can be used in making grade C greaseproof wrappings. If it is necessary, we shall probably do it on the basis of so much poundage or fraction of poundage per square yard.

I am going on to the types of plastics and synthetic resins that are equally as critical as wax. We must keep seeking for other materials that are of the least possible critical nature that will still give us the performance that we must have.

We have tried in our specifications, of course, to prescribe which type shall be used for specific items.

Another thing that might be considered is whether or not we would gain anything if we made further use of grade B material. At the present time, there is very little being used and so far as I know



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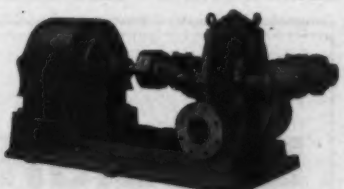

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CENTRIFUGAL PUMPS

perhaps the reduction of grade B is just as difficult as production of grade A.

Ordnance has a method of packaging that follows somewhere between Method 1 and 2 which is known as Method 1A. The requirements for Method 1A packaging are clearly outlined in this new manuual that I referred to before. The function of Method 1A packaging is to provide long-term protection against corrosion caused by moisture or corrosive atmosphere. That kind of atmosphere would be water, fresh or salt, rain wash, slushing or possible immersion which could be resisted by the waterproof style barrier.

This means that we want to make the inner package, the wrapping or the carton that surrounds the treated part, waterproof. If the wrapping comes in contact with the treated part, it must meet the requirements of specification AXS840. If, however, the part is wrapped in grade A paper and put into a folding carton and the waterproofing is accomplished on the carton itself, there is no requirement whatsoever that grade C materials must be used. The use of Grade C materials is a technique that has been developed particularly by the automotive industries that has shown splendid results.

We do get a splendid water-tightness from cartons wrapped in grade A material and which are dipped in sealing wax. However, there is no need to use grade C material to wrap a carton. Anything that will give that carton waterproofness is acceptable to the Ordnance Department, provided only that the complete package will stand a cyclic exposure test and a rough-handling test. The cyclic exposure tets involves conditioning the package at high temperatures and at low temperatures and water spray—not complete immersion, but water spray.

We think that there are great possibilities in the paper industry in developing waterproof materials that can be used to wrap cartons that will withstand the cyclic exposure test. If it can be done it will relieve the wax situation and the grade C materials very substantially. We would say that the materials should have at least a forty-eight hour water resistance by the dry indicator method. That should withstand the cyclic test and handling test.

Another paper requirement of Ordnance is waterproof paper used for box liners. We need the best waterproof paper that will have an outer facing that will not deteriorate in the presence of high humidity or water and we need them particularly made up into bags.

We have developed a new specification for waterproof adhesive to be used in sealing waterproof bags and we would like to see the seams just as strong and just as waterproof as the material itself.

Problems in the Packaging of Signal Equipment

Lt. W. F. CAMPBELL
Storage Branch Distribution Division
Office of the Chief Signal Officer

Our problems are in many cases similar to the other services. I will just try to cover some of them that might be most peculiar to the Signal Corps. Of course, in the items of communication equipment, many of them are very delicate.

We make an effort on all of our communication apparatus, which includes radios and switchboards, to package under method 2, which includes dehydrating agent metal foil moisture proof bags. Such items as glass porcelain insulators must have a high degree of protection against shock and rough handling received in transit. We have to use quite a bit of cushioning materials to insure that these delicate items arrive in the overseas bases in proper and usable condition. Many manufacturers are very lax in selecting cartons and boxes for shipping such items as radios, switchboards, pole line hardware and many others. Many items are received in the Signal Depots in containers which are not even sufficiently strong to permit stacking for proper warehousing.

Also in the matter of crate construction, we would appreciate very much if the manufacturers would follow details as set out for wooden shipping crates in Army Specification 100-14-A. We would like particularly to stress the importance of following details of side and top bracing struts, also diagonals in the crates, as these give proper strength for stacking and for rigidity. Also some of the manufacturers fail to use proper cushioning materials in the packaging of Signal material going to our depots even in spite of the fact that the orders for items specify that the equipment must be packaged for export shipment.

One of the most unique packages that we have in the Signal Corps from the standpoint of interest is the package used for transmitter and radio tubes. These items must have a very high degree of protection against shock, both from the standpoint of the surface and the elements of the tubes. Most of the transmitter tubes are floated in the crate by suspending it with felt or cloth. It is secured to the body in the center or on the ends by fastening the felt, etc., with tape and the other end of the material is fastened in the corners or in some cases the sides of the boxes. As a result of this cradling, the shock is kept away from the tubes.

We have another method of cushioning these tubes, and that is by making a floating pack in the use of collars on each end of the tube and compressing the item with the collar applied within the square individual container. Also we use material such as cellulose wadding for completely wrapping the tubes which is secured fast and placed in the square carton, or in other cases the tube is wrapped in corrugated material to absorb the shock.

We understand that the molded pulp container is still somewhat in the experimental stage.

Always remember that the proper container is selected for a given item, and that if this container is a wooden crate it be built to meet 100-14-A; also, if need be, that the item is properly preserved against corrosion and/or cushioned against shock.

What Can the Engineers Expect of Paper Packaging for Overseas Shipment?

Major JOHN C. BABSON, Chief
Inspection Division Procurement Branch
Office of the Chief of Engineers

I have been asked to present a few questions on paper packaging for overseas shipment, the answers to which will be of great interest to the Corps of Engineers. I will read these questions to you and trust that you will present us with the solution.

1) What type of package can be pro-

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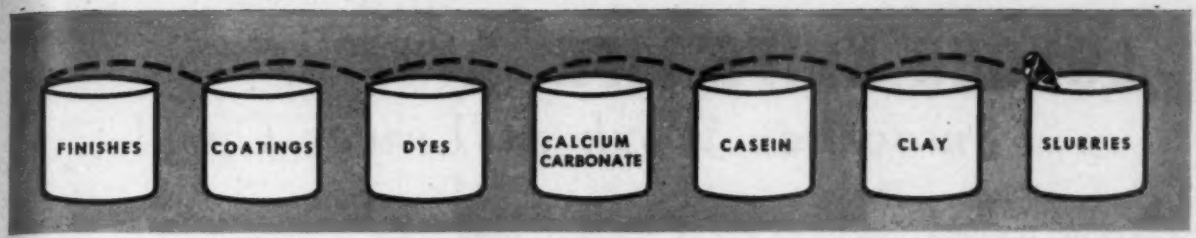

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vided for export shipment of camouflage nets of all types?

2) What type paper package can be developed for export shipment of insulation, wallboard and plywood?

3) What type paper package (sack) can be developed for export shipment of cement and fire clay?

4) What type paper container can be provided for export shipment of bituminous products such as roofing compounds?

5) What type paper container can be provided for export shipment of various chemical compounds such as calcium chloride?

6) What type paper container can be provided for export shipment of surveying instruments, transits, levels, alidades?

7) What type container or method of packaging can be developed for the export shipment of writing paper, office supplies and photographic film?

8) One of our most urgent needs is for a good, fast setting, cold type water resistant glue for our present packages.

Packaging Medical Supplies for the Army

JAMES D. STUDLEY, Chief Packing Section
Distribution and Requirements Division
Office of the Surgeon General
U. S. Army

The Army's medical package is not primarily designed for merchandising purposes as is the antiseptic, the cathartic or the first-aid package where that article is manufactured for direct consumer use. Eye appeal in the Army's medical package is, in fact, hardly secondary in importance. Protection, accessibility, and dispensability are the major factors always in the minds of the medical-package designers.

The waterproof bag liner is an excellent example of package protection—protection of the medical product against water. Not only must this liner protect the medical product against tropical rains, melting snows, fog and even salt water immersion but it must do this in spite of the rubbing and abrasion which always goes with shipment. Field items such as the individual soldier's first-aid battle dressing or his sulfadiazine tablets which he takes against infection immediately on being wounded must likewise be packaged for protection—protection against water and contamination. The plaster of Paris bandage is useless unless so packaged as to be protected against water; likewise X-ray films must be given almost perfect protection against moisture, particularly when shipped to the humid tropics. In the field of packing, too, examples are almost limitless. Sterilizers, X-ray equipment, surgical instruments and numerous other items susceptible to corrosion must be given packing protection and of course protection against breakage. Vials, ampules and bottles must be packed against breakage. In all of this—in both packaging and packing for protection—paper and paperboard play an important part.

Perhaps you would like to know exactly how the Medical Department packages specific items. Perhaps the analysis of specific packages may bring out an idea or two for improvement.

Let's look more closely at the first-aid packet or battle dressing. This is essentially a dressing for self-application by the soldier when wounded and is carried in his web belt. Obviously, it must go through all kinds of weather with him, perhaps through the salt water of an amphibious landing or the flood water of a tropical storm. To be of use it must always be dry; it must always be clean. It is a compact watertight, gastight package and uses the less-critical materials. An automobile has actually been known to have run over it without damage to the dressing. Best of

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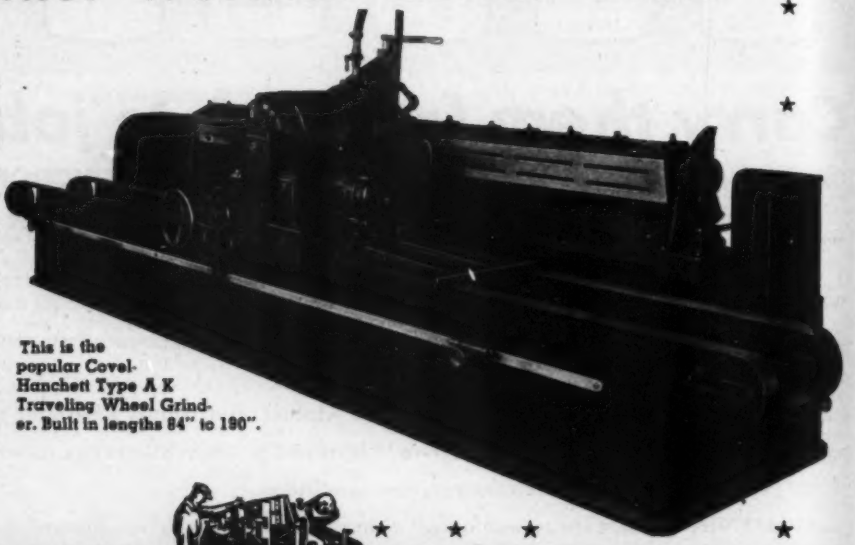

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all, the dressing is quickly accessible to the user. As the wounded soldier removes the packaged dressing from his belt he can easily slip it from its two fiberboard sleeves and tear off (perhaps with his teeth) the watertight envelope. The paper wrapping over the bandage itself is likewise easily removed and the dry clean compressed dressing becomes available. Incidentally, these dressings are now made brown in color so as not to be so easily seen by the enemy sniper.

The wrap immediately surrounding the dressing is of 100 per cent sulphite imitation parchment; of 45 pound basic weight and with a mullen strength of 35. The laminated bag immediately surrounding this wrap is made of a 30-lb. sheet of dense northern kraft on the outside laminated with an asphaltic compound (minimum melting point 175 deg. Fahr.) to a layer of lead foil .001 in. in thickness. The foil is thermoplastically laminated to a cellulose base sheet of .009 in. minimum thickness, coated with a thermo-sealing compound to permit the envelope to be heat-sealed. The weight of the laminated sheet is required to be not less than 225 pounds and the bursting strength not less than 40 pounds. A coating of paraffin is placed on the kraft sheet of the envelope to repel water when the package is dunked or wet. The sleeves are of 25 point, dense, wax impregnated, kraft board, the overlaps being securely held with a waterproof adhesive. The whole gives a package of high utility under the worst conditions of moisture-vapor, water and rough usage. It should be stated, perhaps, that the two sleeves on the outside of the package are required to take a load of 80 pounds for three minutes without collapse with dressing removed and that the bag package is required to take a load of 175 pounds on the seamless faces for five minutes, likewise without collapse. Under this severe load there must be no visible damage and the waterproofing features shall not be impaired.

An item similarly packaged and likewise carried by the individual soldier in the belt is the sulfadiazine tablet, there being eight of these packaged together. These are the tablets which the soldier is instructed to swallow if wounded and it is vital that they be kept dry, clean and readily accessible. Like the battle dressing too, they must be packaged against rough treatment. The outer envelope of the sulfadiazine package is of the kraft-laminated-to-foil type with a layer of regenerated cellulose coated with a thermoplastic which permits heat sealings. Still other items packaged in the kraft-laminated-to-foil wrap are the benzedrine sulfate tablets—carried by the soldier and taken to prevent sleepiness—the plaster of Paris bandage and the X-ray films. The thickness of foil and weight of sheet vary somewhat among the items but the basic materials and packaging methods used are almost identical.

One other class of items packaged in the foil-laminated-to-kraft exterior wrap are metal bushings, nipples, needle-valve and other replacement parts so important to the maintenance of the overseas hospital sterilizer. When needed, these parts are needed badly. They must not be corroded. They must be well packaged. Each part is thoroughly cleaned and preserved therefore in conformity with the provisions of Army Specification 100-14A, Method I, following which it is tightly wrapped in a Grade C, Type I or Type II paper as detailed in Ordnance Specification AXS-840. A minimum of three layers of the paper is used about the part. Following this tight wrapping the part is placed in an identifying kraft envelope. A set of the various parts so packaged are placed together in an overall foil-laminated-to-kraft envelope which is heat sealed with a minimum of entrapped air. The whole is then dropped into a cloth bag of coated fabric which is tied to the sterilizer when shipment is made. A more orthodox method, doubtless, would be to dip the paper wrapped items in XX wax but because so many of them are small and difficult to handle the foil barrier method is used instead.

With drugs, pharmaceuticals and biologicals which include the oils, fluids, tinctures, elixirs, spirits, acids, alcohols, etc.; likewise the ointments, crystals, powders and pastes and the vaccines, antitoxins and stains, a standard packaging method has been adopted. The item whether in glass bottles, tubes or fiber cans is packed in a corrugated-board box of 200-275-lb. test, overpacked in a watertight bag liner and dropped into a wooden box, of approved design. In such a pack we have specified a non-water-soluble adhesive for label application. We have found at least one

adhesive which meets this requirement and which can be used on labeling machines and on vials and ampules as well as on bottles with fair success. There is room for improvement, however, as regards this adhesive situation. There is certainly room for the development of more and better bag liners, particularly if it might be possible to produce a high-test liner without the use of kraft fibers.

Perhaps a word should be said concerning the possibilities of the plastic bottle. The Medical Department has given considerable thought to the use of such bottle and has already specified it for use in certain of the field kits. Generally speaking, the plastic bottle will carry the same contents as will the glass bottle at a 20 per cent saving in cubeage and a 75 per cent saving in weight. Only certain items can be bottled in plastics without undesired reactions but to some extent these reactions can be obviated by the use of another plastic. Certainly the plastic bottle would seem to have possibilities wherever weight is to be saved. They will not break at ordinary temperatures and require little or no packing, therefore, or protection against breakage. It is possible too that they will hold the plastic cap better against loosening than does the glass bottle.

Our class 2 items—gauzes, bandages, absorbent cotton and adhesive plasters are cartoned and packed inside a "V" board box with waterproof bag liner. A package of cotton or of gauze is absolutely worthless if wet or contaminated with water and it is vital that the bag liner be effective.

Surgical instruments have given us almost no trouble to date. The non-standardized wrappings in which they are now received and in which they are shipped are doing a good job against corrosion. If we improve the wrap against corrosion it will probably be with a Grade C, Type 3 paper which is greaseproof, acid-free, noncorrosive and sealable.

You are probably interested in the possible use of the paper product by the Medical Department for other than packaging purposes. One product in which the Department is interested is the blanket substitute. Obviously, the paper blanket must successfully meet rather rigid requirements. It must have good tearing strength, a high flexibility and crumpling value, softness, waterproofness, insulation value and lightness in weight. It must be of reasonable cost. If it can be made of the relatively more plentiful or waste fibers, such will be in its favor. The substitute blanket certainly has possibilities.

Another product in which the Medical Department is and has for some time been interested is plasticized hospital (fiber base) sheeting. This would be used as a substitute for the regular sheeting. To date, however, none of those tested have shown sufficient durability and tensile strength under actual use. The best ones among those tested had a life of but two or three hours. In addition to durability, tensile strength, and reasonable life, this substitute for sheeting must be soft to the patient, somewhat absorbent and possess other rather evident characteristics.

Digester Castings Are "*Standing Up 100%*" •After Two Years in Corrosive Service

Corrosion is especially pernicious in the sulfite digestion process because of the excess of sulphur dioxide in the solution employed, and has caused high mortality of ordinary iron or steel parts.

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Picture A-400 shows some of the Amsco Alloy castings in the mill referred to. The large casting below the digester cone handles the sulfite sludge, which is severely corrosive; and, to the left, is a blow-off valve. Picture R-516 shows blow-off valve bodies ready for shipment. Other F-12 Alloy castings in the same digester include steam nozzles, valve discs, sleeves, wedges, seat rings, gauge glass plugs and fittings.

Recently an official of the paper company wrote: *"The Amsco Alloy castings were made two years ago and, as previously stated, they are standing up 100%."*

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Packaging Problems of the Army Air Force

MAJOR RAY SCHMIDT, Army Air Force

Each day I have coming into my office sincere men from practically every industry and they say "If we only knew how you operate we would be in a position to help you." I would like to explain how the Air Corps operates with respect to their supply.

The Army Air Force is divided into a number of commands and those commands in turn are divided into the technical command and the combat command. Of the technical command, the two that are of most importance here are the Materiel Command and the Air Service Command.

The Materiel Command is in charge of production of new planes, experimentation and the administration of the supply program of the Air Service Command. The Air Service Command is charged with the determination of the requirements for supply and the maintenance of combat equipment in the field.

The Air Service Command is primarily concerned with spares and supplies. They determine their own requirements in terms of what they want. How many or how much. When or where. After these programs have been resolved in what is called a purchase request it moves over to the Materiel Command which sets up contract requirement specifications as to the materials and performance of each of these items, then the production, inspection and delivery to the Air Service Command.

In the matter of administering packaging, considering first of all the Materiel Command, the packaging activities center at Wright Field and depend upon their effectiveness through decentralization in six separate Army Air Force Materiel Procurement Districts. These districts are in close contact with Wright Field and Wright Field in turn is in close contact with Air Service Command. The Air Service Command in so far as packaging is concerned operates through eleven Air Service Command Areas throughout continental United States and through a given number of theaters of supply outside of continental United States and its primary concern is with the repackaging between depots and subdepots overseas.

Our problem at the present time, concerning domestic packaging, are with containers that meet the so-called Consolidated Freight Classification requirements. Based on the sheaves and reams of unsatisfactory reports that come into our place, we, of necessity, will have to set aside the Consolidated Freight requirements, at least to this extent and that is to restrict paper containers to a minimum of at least two hundred and fifty pounds, Mullen Test.

Beyond that, the exterior packaging requirement will have to be in conformance with those outlined in the section's on exterior containers in specification 100-14A excepting the requirements of a waterproof case lining. We have difficulty with closures. Waterproof closures, adhesives and suitable tapes are a constant headache to us.

Each carload of material opened at the depot on examination will show failure of the domestic containers attributable to lack of those characteristics in those packages.

It is desirable to use steel strappings of wire around the cartons, bales and bundles. Each should meet our domestic shipping requirements. Cushion it in order to prevent mechanical failures due to shock or damage by breakage, causing ensuing leakage and contamination of the residue of the shipment.

In the case of domestic shipments we are obliged at the present time to embark on a serious program of corrosion proofing items in storage at our Air Service Command establishments, attributable to our failure to have included corrosion proofing requirements in domestic shipment. The Air Corps operates under a corrosion proofing specification known as AN-P-12 and due to contractural requirements AN-P-12 becomes operative only in the case of export shipments.

Passing on to our export requirements our problems mainly are of material shortage. Fortunately for the packaging industry, the demands for these various packaging materials going into the program is piece by piece. If we were to turn loose our requirements for all of the items that we need in specification 100-14A, the industry could not take it.

We have set up machinery to control every Method 2 package that is in use in the Air Corps and we would like to be informed at Wright Field of any contemplated package involving the Method 2 principle.

We plead for wiser application of the bag-box principle. We have a suspicion that there is excessive dunnage in the packaging, resulting in unnecessary cubage, increased tare of the package and increased requirements for other packaging materials reflecting itself in increased packaging costs and bringing down upon us the probably stigma of excessive use of packaging materials.

This section includes abridgments of papers presented at the annual meeting of the **Technical Association of the Pulp and Paper Industry,** held in New York City, February 15-18, 1943. This is the eighth installment.

Ink Drying as Affected by Various Paper Stocks

MATT J. LECKEY, Research Chemist
Sinclair & Valentine Co.

Every printer and every lithographer engaged in work with printing inks is familiar with the unexpected results occasionally encountered in the drying process. Extensive research continues in an effort to obtain all the possible information that might be helpful in the solution of these problems.

Experimentation with ink vehicles and films has shown that there are four main ways in which printing ink dries—namely, oxidation, polymerization, penetration, and evaporation. The latter is concerned primarily with gravure and heat-set inks.

Oxidation and polymerization are the two chemical reactions which a drying vehicle undergoes in passing from the fluid to the solid state. The fact that a printing ink varnish absorbs oxygen from the air can be proved by the following phenomena.

1) The varnish shows a gain in weight.

2) The iodine value of the oil is reduced which indicates that the double bonds are being satisfied.

3) A reduction in the length of time required to obtain complete drying is noted in the presence of pure oxygen as compared with the drying time under atmospheric conditions.

Polymerization or the grouping together of molecules to form larger aggregates ("Chemistry of Organic Compounds," Conant p. 78) takes place in a drying oil film, together with oxidation. Proof of polymerization can be obtained by taking a varnish and heating it in the absence of oxygen. It will eventually solidify and show an increase in molecular weight. Both of these changes point to polymerization (Friend and Alcock, *J. Oil and Color Associate,* 1942).

Penetration, except on nonporous surfaces, usually accompanies oxidation and polymerization and aids in the drying process of the ink film. It consists of the absorption of a percentage of vehicle into the stock or paper, leaving an ink film with a high concentration of pigment on the surface which does not smudge or offset as easily as a freshly printed film. News inks depend entirely upon penetration of pigment and vehicle for drying, but this is not true chemical drying.

Printing ink vehicles absorb oxygen from the air, but this process is much too long for practical purposes. To speed up this action, various ingredients are added to the ink. These ingredients are known as driers and consist of metallic compounds of lead, cobalt, and manganese in the form of resinates, linoleates, and naphthenates (Felix Fritz, "Driers and Their Use," *Chemicker Zietung* 60:921, 924). The action of these driers is believed to be catalytic in nature as they help to carry oxygen to unsaturated oil molecules. Whether or not they are true catalysts is debatable; because there is evidence that the metals have various effects upon the oil, and the acid radical to which the metal is combined exerts an influence upon the effectiveness of the dryer ("Driers," Montreal Paint and Varnish Production Club *See* Section Circ. 546:307-325, 1937).

Observation of drying action and experimentation with drying oils show that various factors either accelerate or inhibit this drying action. Among the accelerating factors are sunlight, heat, ozone, ultraviolet, and infrared light, and certain inorganic pigments. High relative humidity, low atmospheric oxygen content, low temperature, antioxidants, and most organic

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pigments tend to retard the normal drying time of ink vehicles.

Ink-film receptivity has a definite bearing on ink-drying time. A paper which accepts an ink smoothly will tend to dry faster than a hard and spotty sheet. Porosity is probably the answer here as experiment has shown that an ink will dry on a porous sheet more quickly than on a hard sheet. By penetration of some of the ink vehicle into the paper, a film remains on the surface which has a high pigment concentration and a relatively low varnish concentration. Since only part of the varnish remains upon the surface, the drying time is accelerated (Macbeth and Maull, *Photo Lithographer*, March, 1939). It follows therefore that an uneven sheet which accepts the ink unevenly and which has unequal penetration over its surface, will have a slower drying rate than a sheet which accepts the ink smoothly and permits normal and uniform penetration.

It is possible to go to extremes and to have an overporous sheet. This is especially true of coated paper, which often results in chalky ink films. Chalky ink films should not be confused with nondrying ink films. An ink may be thoroughly dry and yet be chalky. Such an ink film will rub off the stock very easily. Pigment binding here enters the picture. Chalkiness occurs when a high percentage of the varnish is absorbed by the stock and a relatively small amount of vehicle remains on the stock surface to bind the pigment together. Chalky ink films may occur on normal coated papers during periods of high relative humidity. The high humidity retards the drying and permits the varnish to continue to penetrate for such a long time that eventually the point is reached where insufficient varnish remains to properly hold the pigment together.

Experience and experimentation shows that the best all-around moisture content in a printing stock is between 4 and 5 per cent; less than that generally results in a stock that does not properly accept the ink. The answer to this can possibly be found in a study of the capillary action of the paper fibers. There are conditions which prevent keeping stock moisture content between this 4 and 5 per cent; not the least of these is the necessity of making paper conform with the moisture content of shops that have air-conditioning equipment.

A heavily coated sheet of a porous nature causes the ink to set more quickly than a coated sheet of average thickness and low porosity. The latter is the type of coated stock best suited for gloss inks as the ink will ride the surface and thereby maintains a high gloss. Gloss inks depend almost entirely upon the drying properties of the ink itself. Consequently, at the present time, we feel that all other factors being equal, drying variations on coated sheets of different coating composition is due to unequal penetration rather than the coating itself.

Machine-coated stocks, in which the body stock and the coating is applied in the same operation, show drying variations with changes in coating formulations. The answer to this can probably be found in the fact that the coatings of machine-coated papers occasionally contain ingredients not usually found in regular coated stocks. Ingredients, such as stearates and other soaps are sometimes added to overcome the uneven and spotty coating that is frequently found in this type of stock. When an excessive amount of these materials is added, we have found that drying is delayed far beyond normal time. On one experimental stock, we found that a good drying commercial ink failed to dry for weeks after being printed.

It has long been suspected that glycerine content of paper may be a retarding factor to normal ink drying time. Other hygroscopic plasticizers in coatings exert a similar effect. To obtain definite information with reference to these factors, various experimental papers were prepared in which the glycerine content varied. This was accomplished by taking uncoated sheets and soaking them in glycerine solutions of varying concentrations. These sheets, after drying, were used to study the drying time of commercial inks. It was found that the length of drying time increased directly with the increase in the glycerine concentration.

The *p*H of paper was also considered as another possible influencing agent upon normal drying time. The *p*H was determined by taking weighed amounts of representative stocks in the same grade and boiling them for specified periods, then running a *p*H on the resulting solutions. It was noted that as the *p*H increases, the drying time tends to decrease. The same ink will dry more rapidly on a paper of high alkali content. It should be stated here that we have encountered one exception which, as the saying goes, may prove the rule. A stock with a high *p*H was brought to our attention on which a good commercial ink failed to dry for days. On a similar stock, under identical conditions, the ink dried in a few hours. Although we were unable to definitely prove it, we feel that the alkali materials used have a great deal to do with the unique finding.

Metaphosphate Increases the Washing Efficiency of Chemical Pulps

E. R. LANG and F. T. LAURIN
Calgon, Inc.

The purpose of this paper is to present the procedures employed and the results obtained during an investigation[1] of the effect of glassy sodium phosphate on washing efficiency.

The glassy sodium phosphate employed was a molecularly dehydrated material containing 66.5 per cent of P_2O_5[2] produced by thermal process from soda ash and food-grade phosphoric acid.

The fundamental properties of this glassy phosphate which might play a part in this washing procedure are:

1) It sequesters many metallic ions in the form of soluble complexes.

2) It exhibits a pronounced dispersive action upon finely divided metal oxides and salts.

3) It inhibits the crystallization of many soluble salts, stabilizing a condition of supersaturation.

All the pulps used in this study were prepared in a stainless-steel digester equipped with a complete external heating system. The liquor was heated indirectly by means of a hot-oil heat exchanger, and

(1) This investigation was carried out at the New York State College of Forestry, Syracuse, N. Y., under the direction of Professor C. E. Libby.

(2) Supplied commercially under the name of "Calgon." This material is frequently referred to as "sodium metaphosphate" or "hexametaphosphate" although its molar ration of Na_2O to P_2O_5 actually exceeds somewhat the value of 1 corresponding to the metaphosphate formula of $NaPO_3$.

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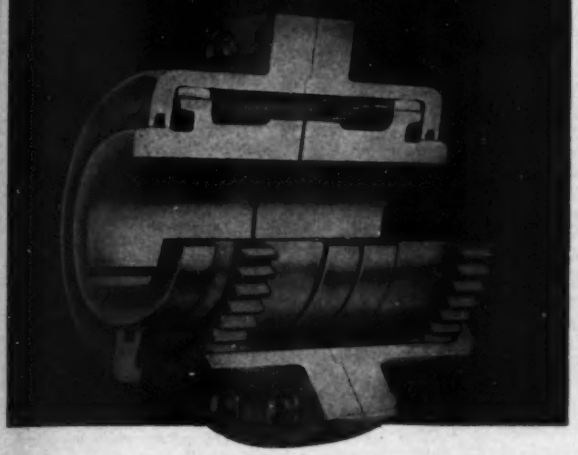

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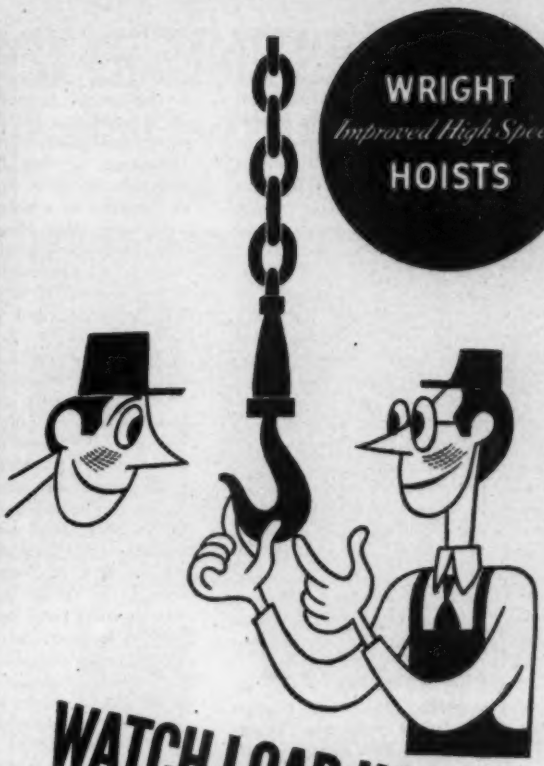

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In the bleachability tests, sulphate pulp washed with metaphosphate consistently required less chlorine to attain a given brightness than when metaphosphate was not used. Using a 3-stage bleach to yield a brightness of 80 per cent, 12 per cent less chlorine was necessary as a result of using 0.04 per cent metaphosphate based on the weight of the pulp.

Due to this saving in chlorine the beater strength characteristics are favorably affected. The pulp washed with metaphosphate retains 94 per cent of its unbleached strength after bleaching, as shown by the burst factor while the water-washed pulp retains but 86 per cent. An improvement of 8 per cent is obtained on the pulp washed with metaphosphate.

The washing efficiency of hot water is better than that of cold water. However, the advantages shown here with the use of metaphosphate were also obtained when cold water was used.

The employment of 0.04 per cent metaphosphate based on the weight of soda pulp saved 12 per cent chlorine when bleaching to a brightness of 65 per cent in a single-stage process.

As a result of this chlorine saving, the metaphosphate-washed pulp was stronger than the water-washed pulp after bleaching. The pulp washed with metaphosphate and bleached retained 91 per cent of its unbleached strength as shown by the burst factor, as against a retention of 85 per cent by the water-washed pulp.

Washing sulphite pulp with metaphosphate produced even larger savings in bleach than sulphate or soda pulp. In a single-stage hypochlorite bleach about 40 per cent less chlorine was required to obtain a brightness of 80 per cent by the application of only 0.18 per cent metaphosphate based on the weight of the pulp as compared to a water-washed pulp.

In a two-stage bleach employing chlorination and hypochlorite, 20 per cent less chlorine was required to bleach the pulp to a brightness of 80 per cent when metaphosphate was used in the washing procedure.

The pulp washed with metaphosphate and bleached retained 95 per cent of its unbleached strength as shown by the burst factor while the pulp washed with water retained only 87 per cent, an advantage of 8 per cent in the bleached strength of the pulp washed with metaphosphate.

The cuprammonium disperse viscosity of the sulphite pulp indicates that the pulp washed with metaphosphate and bleached retains 57.3 per cent of its unbleached strength as against 48.4 per cent for the water-washed pulp, an advantage of 9 per cent in the chemical strength of the pulp washed with metaphosphate.

Successful mill trials on soda pulp have already been made where the metaphosphate was introduced in the hot wash water at a concentration of 35-40 ppm.

The pulp was washed in wash pits with weak black liquor followed by a hot water wash at 85 C. Over a period of eight days the pulp from poplar chips washed with metaphosphate, when bleached to the brightness of 68-70 per cent previously held in this mill, required between 8 and 9 per cent less chlorine.

On another trial, a mixture of two-thirds jack pine and one-third hardwood was washed with water at 85 C. containing 35-40 ppm of metaphosphate. Records of the bleach requirement of 72 digesters of this mixed pulp showed a saving of 11.6 per cent in bleach chemicals.

These trials not only reduced the chlorine required for a 70 per cent brightness pulp but produced better pulp at lower cost.

The role that metaphosphate plays in improving the washing efficiency of chemical pulps cannot be explained with certainty until the impurities in cooking liquors are more definitely defined than at present. We believe that with the use of metaphosphate in the wash water, the removal of coloring matter from pulp is accomplished with greater efficiency.

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CONVENTIONS AND COMING EVENTS

Oct. 27-28—Joint meeting of Southern and Southeastern Divisions of the American Pulp and Paper Mill Superintendents Association, Atlanta Biltmore Hotel, Atlanta, Georgia.

Nov. 4-5—Annual Conference of Packaging Institute, Inc., Hotel New Yorker, New York City.

Nov. 18-19—Annual meeting, National Paperboard Ass'n, Waldorf-Astoria Hotel, New York, N. Y.

Dec. 6-11—19th Exposition of Chemical Industries, Madison Square Garden, New York City.

AMERICAN CHEMICAL SOCIETY HOLDS 106TH MEETING

▶▶▶ THE 106th MEETING of the American Chemical Society was held at the Hotel William Penn, at Pittsburgh, Pennsylvania, September 6-10th.

Whereas most papers having a direct or indirect bearing on the pulp and paper industry were concentrated in the Division of Cellulose Chemistry, this was by no means the only division that would have stimulated the paper technologists. What follow are simply a few of the high spots of the meeting.

For example, the Division of Sugar Chemistry and Technology had two highly fundamental papers on starch which is always interesting to the papermaker. They dealt with ultracentrifugal studies on amylose and amylopectin components of corn starch (presented by Drs. T. G. Fox, Jr., and Prof. Charles O. Beckmann, of Columbia University), and the ultracentrifugal behavior of starches synthesized from glucose —1—phosphate (by potato phosphorylose) in the presence of activative polysaccharides (presented by Dr. R. I. Dunlap and Dr. Beckmann). Corn starch has three major components: (1) an amylose of relatively low molecular weight (about 80,000), (2) an amylopectin with a molecular weight of 400,000-700,000, and a (3) very heterogeneous mixture having a molecular weight range of 3 to 11 million (also an amylopectin).

Corn starch contains 22 per cent of (1), 20-30 per cent of (2), and 48-50 per cent of (3). The examination of domestic potato starch by consistency measurements and other tests was reported by Treadway, Smith, and Weiss of the Eastern Regional Research Laboratory at Philadelphia. Twenty-four samples of starch produced by American factories were examined by various chemical and physical tests, and the influence of drying was studied. Smith and Treadway also described the preparation and properties of starch acetate (which appeared promising in its application to paper and other fibrous materials, and in the form of water resistant adhesives).

Certain endosperm mucilages are of interest to the paper industry, and a fermantation method for determining *d*-galactose (in their hydrolyzates) was described by Wise and Appling of the Institute of Paper Chemistry.

In the Division of Water, Sewage and Sanitation Chemistry, there was an interesting symposium on industrial hygiene. The chemical control of industrial health hazards were discussed by Warren Cook, Division of Industrial Hygiene and Engineering Research, and other papers dealt with specific industrial health problems and hazards. The same division carried a paper on corrosion inhibitors for water systems, by G. B. Hatch and Owen Rice, of the Hall Laboratories, Inc., of Pittsburgh.

In the Division of Industrial and Engineering Chemistry there was a symposium on Research Management, in which Chas. L. Gabriel (Pubicker Commercial Alcohol Company, Philadelphia), Chas. H. Egan (Dewey and Almy Chemical Company),

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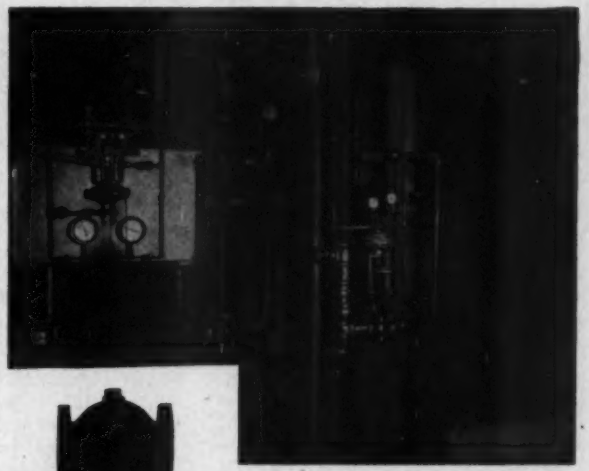

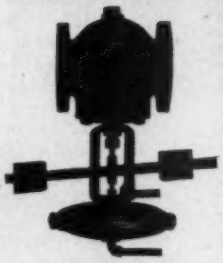

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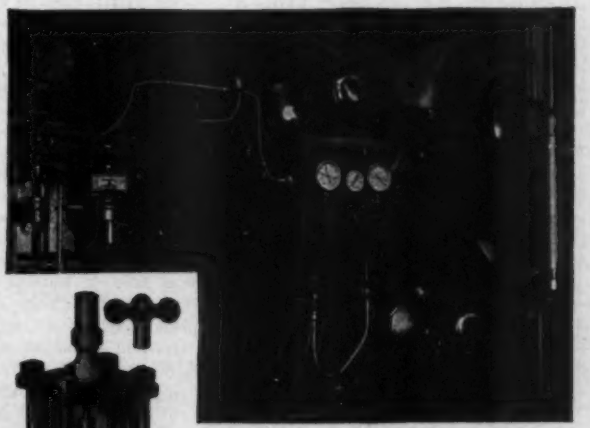

• The Stickle Thermal and Tension Control, as shown by above installation is making possible uniform drying—controlling moisture within a variation of one-half of one per cent. Is saving 400 to 1200 lbs. of steam per ton of paper dried, besides reducing curling and shrinkage and eliminating cockling. At left—Stickle Micro Adjustable Orifice which supplies visibility of operation and permits accurate modulated control of operations.

ARMY E NAVY

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O. E. May (U. S. Department of Agriculture); C. L. Knowles (Eastern Division of the Dorr Company, Inc., of New York), George D. Beal (Asst. Director of the Mellon Institute) and Raymond Stevens and Earl P. Stevenson (Arthur D. Little Inc., Cambridge, Massachusetts) all took part. An important symposium on manpower problems in industry formed the topic of another session of this same division. The danger of post war "surpluses" in manpower was discussed.

Messrs. George Papps and Donald F. Ottimer, of the Polytechnic Institute of Brooklyn, New York, presented a very interesting paper on the separation of fatty and rosin acids from tall oil (by-product of the sulphate pulp industry) using a new technique. Tall oil was hydrogenated and its two main components (stearic and abietic acid) were separated by the selective adsorption of the first on activated carbon. Various solvents were used, and the solutions were led through a suitable column containing the adsorbent carbon. The solvent retained the abietic acid, and later an excess of solvent was used in washing out the fatty acid. Nitropropane—1—appeared to be the solvent effecting the sharpest separation of the series.

An important symposium on "Technical Library Techniques" deserves brief mention. The importance of lucid and precise technical writing in chemical education was stressed by Florence E. Wall (General Aniline and Film Corporation, of Easton, Pennsylvania). The pitfalls and problems of publication were outlined by M. G. Mellon (Purdue University). Dr. Crane, editor of *Chemical Abstracts*, told of the importance of abstracting and indexing. Rules for manuscript preparation were given by John Sasso (Product Engineering). Dr. E. H. McClelland (Pittsburgh Carnegie Library) made a plea for accuracy in printed material. Problems of scientific literature survey were stated by members of the staff of the Universal Oil Products Company. Trade journals and house organs were discussed by H. A. Marple (Monsanto Chemical Company). This does not give a composite picture of the symposium—simply its trends and general objectives.

The Division of Cellulose Chemistry, the sessions of which extended throughout the day, on September 9 had some interesting papers. The fibrillar structure of high-tenacity rayon was reported by L. M. Welch and W. E. Roseveare of the Du Pont de Nemours Company (Richmond, Virginia). A series of X-ray diffraction patterns and photomicrographs showed the effect of crystallite orientation on fibril formation in "synthetic" cellulose fibers. Rayons that were unoriented had no fibrillar structure, whereas rayons with a high crystalline orientation showed distinct fibrils. The talk was illustrated with convincing photomicrographs, and was widely discussed.

An important paper on the chemical composition of redwood bark was presented by Harry F. Lewis, of the Institute of Paper Chemistry, representing the joint work of Lewis, Brauns, Buchanan and Kurth, at the Institute. In the commercial production of redwood bark fiber, by the Pacific Lumber Company, two products separated in approximately equal yield were bark fiber and bark dust. The former is used as an insulating material, and also when blended with other fibers for textile purposes. The bark fiber contained cellulose and lignin. Furthermore, when the lignin determination was made, there were at least two other products appearing as "lignin," a pectin was present, as well as very small amounts of a catechol-type tannin and phlobaphene.

The two substances which test as "lignin" were then characterized. They appear to be phenolic acids of high molecular weight. The predominating compound has alcohol hydroxyls, phenolic hydroxyls, and carboxyl groups in the ratio of 2:4:3. Methoxyl are absent. The other product, which is closely related to the lignin of coniferous woods, contains somewhat less methoxyl than does ordinary lignin and a certain amount of carboxyl. The bark dust seems to be quite rich in the phenolic acid referred to above. From either source, this substance may be obtained by alkaline extraction and subsequent acidification. Dr. Lewis also discussed the possible industrial uses of the substance. The talk was illustrated by means of samples of the bark used for insulation and textile purposes. In the latter case it was mixed with low grade wool. He also demonstrated cotton and redwood bark batting used in mattress manufacture.

A second paper by Dr. Irwin A. Pearl and Dr. Lewis took up the reduction of aromatic nitro compounds by sulphite waste liquor. It is well known that nitrobenzene and alkali convert lignin to vanillin. Dr. Lewis gave a report on a comprehensive study of the conditions for the reduction of nitrobenzene by means of sulphite waste liquor and alkali, considering such variables as time of reaction, temperature, concentration of reactants, order of reaction, and the nature of the waste liquor used. The reaction mechanism was studied thoroughly. When carried out at atmospheric pressure, sodium *p*-azobenzenesulphonate was shown to be an important product. Other reduction products obtained in high yields (depending on conditions) were ozoxybenzene, azobenzene, and aniline. Optimum conditions for preparing each of these in highest yield were determined. In these experiments, vanillin was a by-product of the reaction, and recoveries up to 25 per cent of the lignin in the liquor were obtained. The reuse of desulphonated lignin was considered. Sulphite waste liquor was shown to be a good substitute for zinc dust in the preparation of a mixture of azoxybenzene and sodium azobenzenesulphonate for direct conversion to the industrially important benzidine. This is one of the very stimulative investigations on the utilization of sulphite wastes.

Dr. Ernst Berl, Carnegie Institute of Technology, gave a report on the stability towards heat of such carbohydrates as cellulose, starch, lower carbohydrates, lignin, humic acids, etc. The carbohydrates showed marked differences from each other. Heat stability increases in the higher carbohydrates, and of these cellulose showed the greatest stability. However, mannitol and inositol were more stable than cellulose, and lignin and the humic acids decompose at higher temperatures than do the carbohydrates. The experiments were undertaken to obtain an insight on the geochemical formation of coal. Dr. Berl's whimsical, philosophical approach was delightful.

Dr. Heuser, speaker for his co-workers, Dr. R. A. Stillings and R. F. Van Nostrand (of the Institute of Paper Chemistry), reported on the action of ultraviolet light upon cellulose, and discussed the degradative changes taking place. Irradiation made the cellulose sensitive to oxygen, a finding that was supported by the observation that degradation continued when irradiated cellulose was later stored in air or oxygen, but stopped when these gases were replaced by nitrogen. The work was discussed by Dr. Berl.

The use of cupriethylene diamine as a solvent for the precise determination of cellulose viscosity was described by R. S. Hach (Weyerhaeuser Timber Company). This solvent has certain advantages over the usual cupramonnium hydroxide solvent used in viscosity determinations. Cuprithylene diamine is much less sensitive to small amounts of oxygen, and reproducible cellulose viscosities could be obtained far more readily and with less equipment than is now required. The solvent is also well adapted to rapid methods required in plant control laboratories. In a half hour such a determination can be completed. The viscosities in newer reagent have been compared rigorously with the A.C.S. standard (tentative) method, and correlation curves showed the relationship between viscosities determined in a 1 per cent cellulose dispersion in the new reagent, and a 2-5 per cent cellulose dispersion in cuprammonium.

Three highly technical papers on the fractionation of cellulose were presented by Prof. Sidney Coppick, of the New York State College of Forestry, representing his

(Concluded on page 813)

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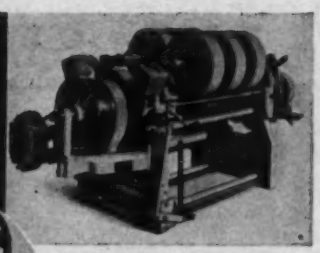

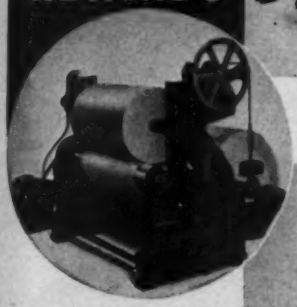

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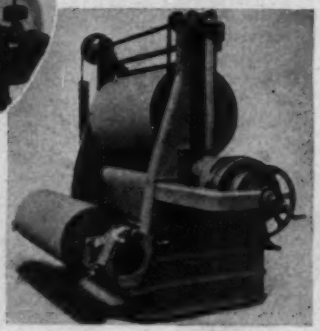

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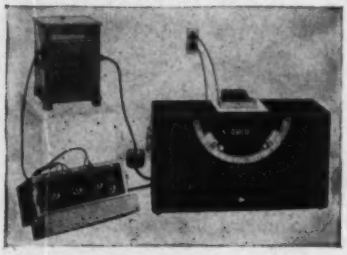
NEW EQUIPMENT AND SUPPLIES

Instrument for Measuring Gloss

American Instrument Co., Silver Spring, Md., has announced the *Aminco-Scott* glossmeter (goniophotometer) for measuring gloss of any plane surface, such as paper, at any angle between zero and 70 degrees, with unidirectional illumination at any angle between zero and 70 degrees from normal to the surface. The instrument consists essentially of four main components: goniophotometer, reference plate



and sample holder, control and measuring unit, and galvanometer. It operates on 110-120 volts 60 cycles (controlled frequency) single phase a-c.; is unaffected by fluctuations in line voltage; and need not be operated in a darkened room.

The instrument has sufficient sensitivity and wide range to measure relative apparent reflectance from high gloss to flat gloss without the use of neutral filters, wedges, or similar devices.

A complete gloss curve of a high gloss sample can be obtained in approximately thirty minutes. Samples may be of any size over 2⅛ in. by 3 in.

Carboy Drainer

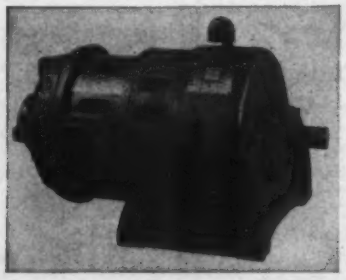
A carboy drainer, designed to prevent accidents caused by splashing in pouring from a carboy, has been announced by Wahlert Products Corp., 27 Lafayette St., Brooklyn, N. Y. An air vent assures uninterrupted flow of liquid and eliminates pumping or syphoning. This vent is of

hard, acidproof rubber, as is the inverted spout. The cuff, on the other hand, is of soft rubber to permit attachment to carboys with necks varying slightly in size. All parts are replaceable.

The drainer is made in three sizes, based on outside diameter of carboy necks: namely, 1¼ in. to 2⅛ in., 2¾ in. to 3 in., and 3¼ in. to 3½ in.

New Line of Gearmotors

Westinghouse Electric & Manufacturing Co., East Pittsburgh, Pa., has announced a new line of horizontal parallel shaft type gearmotors for a wide variety of industrial applications over a range of 1 to 75 hp. The use of adaptor castings between motor and mechanical parts allows the use of all standard Westinghouse N. E. M. A. frame motors with each type of unit. The



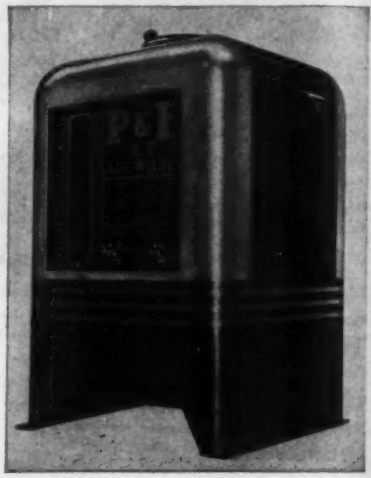
design of the motor-adaptor assembly being common between unit types, such assembly can be shifted between unit types to meet changes in speed requirements.

Gears and bearings are lubricated by a positive splash system. A new case design allows oil to circulate freely at all times.

Two other features of the line, cited in the announcement, are: compactness, and improved foundation stability — through heavy exterior ribbing of the housing at each mounting hole.

New A-C. Welder Line

Harnischfeger Corp., Milwaukee, Wis., has announced the addition of a line of industrial a-c. arc welders to its present line of d-c. machines. Made in seven Heavy Duty and four Intermittent Duty models, the new line features "WSR" (welding service range) ratings which show actual minimum to maximum output of usable welding current. Specific "WSR" ratings of Heavy Duty models are: 50 to 270 amperes,



60 to 375, 90 to 500, 100 to 625, 125 to 750, 150 to 900, and 200 to 1200; of Intermittent Duty models, 20 to 185 amperes, 20 to 235, 20 to 285, and 20 to 335. Settings and control of current throughout the welding service range involves one simple, easy-to-operate adjustment.

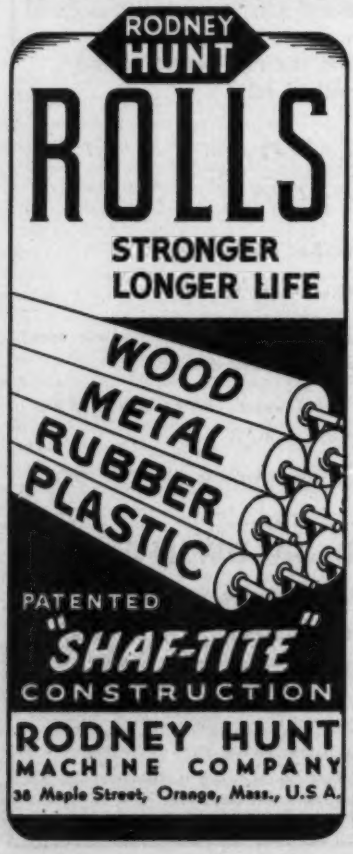
New Conveyor Belt Design

The B. F. Goodrich Co., Akron, O., has announced a patented construction for conveyor belting. Designated as the *Transcord Breaker*, the construction consists of breaker cords placed across the belt width, rather than parallel with the cords of the belt itself, usually a short distance above the top ply, leaving a protected layer of rubber between the breaker and carcass. According to the manufacturer, this construction provides greater resistance to cutting action from materials striking the belt; and prevents distortion of the rubber cover beyond its elastic limit because of severe impact.

Boxboard Tester

A boxboard tester for determining the strength of boxboard and similar materials has been announced by the Special Products Division, General Electric Company, Schenectady, N. Y. The design of the tester is based on a unit developed by R. L. Beach, General Electric engineer, and used by the firm for several years in establishing specifications and controlling the quality of its purchased fiber containers.

Mounted on a metal base, the tester, having only one moving part, consists of a pendulum on the end of which is a rod



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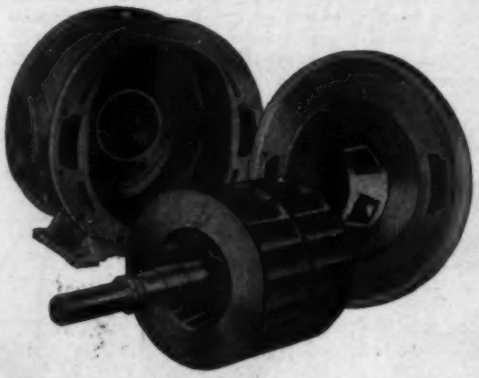

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HOW does it speed up plant production? Partly by eliminating many causes of machinery shut down and thereby saving valuable production time. Partly by offering a simpler, more workmanlike way to provide for modern, efficiency-boosting methods of syphon roll drainage.

WHY don't you take a tip from the hundreds of Johnson Joint users who report that the savings in maintenance alone quickly pays the cost of changing over. Write for new bulletin which shows a size and type of the Johnson Joint for every paper machine, calender, and corrugator.

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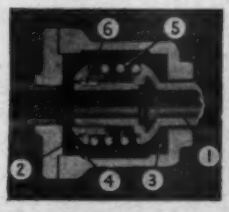

● Though the Johnson Joint was introduced less than ten years ago, over a hundred paper mills now use 50 or more; over fifty mills have purchased from 100 to as many as 800.

Nipple (1), fastened to roll. Sliding collar (2), keyed (6) to nipple. Carbon graphite seal ring (3) and bearing ring (4), which eliminate oiling and packing. Spring (5), for initial seating only; joint is pressure sealed.

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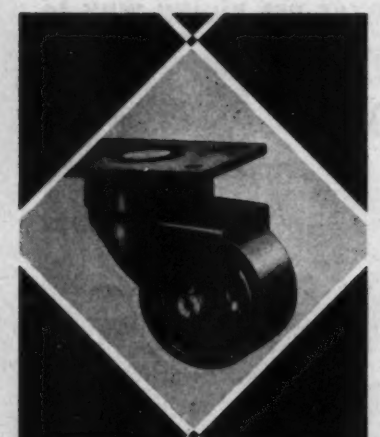

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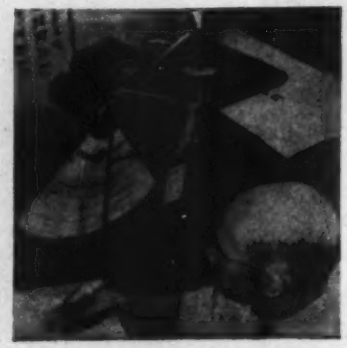
bent to form an arc of 90 degrees, with a triangular metal point one inch in height at the end. This point is shaped like the corner of a box in order to simulate actual shipping conditions, since the majority of boxes damaged in transit are punctured by the corners of other crates and boxes being forced against them. The simulation of actual shipping conditions also determined the one-inch height of this point, as



punctures penetrating such boxes to a depth of an inch or less rarely injure the contents.

In operation, the unit holds the material to be tested firmly between two clamping plates which are level with the axis of the pendulum. Operated by a trigger, the pendulum, upon being released, swings through its arc. The number of degrees less than 180 degrees through which it swings is a measure of energy dissipated in puncturing and bending the material being tested. The scale on the tester, which has an indicating hand, is calibrated so that the reading is the actual inch-ounces per inch of tear made during the test.

Boxboard (from .014 in. liner to .140 in. solid kraft), waterproof boxing material, and corrugated board (from the lightest non-test grade to the heaviest double-wall board) may be tested with the instrument.

Rotary Pump with Removable Liner

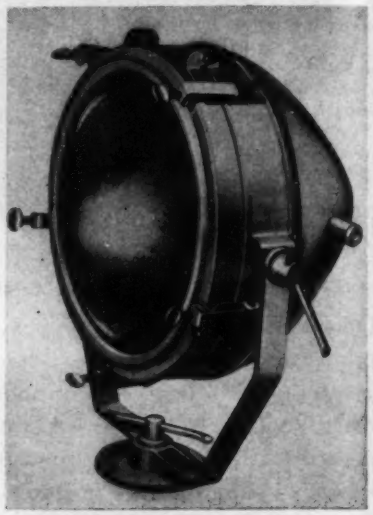
Blackmer Pump Co., Grand Rapids, Mich., has announced a rotary pump with an improved removable liner. The replacement of a liner involves only the removal of the pump heads, driving out the old liner, and inserting a new one. Neither piping nor drive is disturbed; and no fitting is necessary. The pump, made in capacities from 20 to 750 gpm and pressures up to 300 psi, is recommended by the manufacturer for the handling of corrosive or mildly abrasive liquids under conditions where pump life is normally very short.

Controlled-Beam Floodlight

Revere Electric Manufacturing Co., 2949 N. Paulina St., Chicago, Ill., has announced the Revere No. 5701—500 watt floodlight for use wherever a controlled light source is needed. A trunnion permits manual horizontal rotation throughout 360 degrees; a yoke arrangement, unlimited vertical adjustment; and a locking device, locking the floodlight in any position.

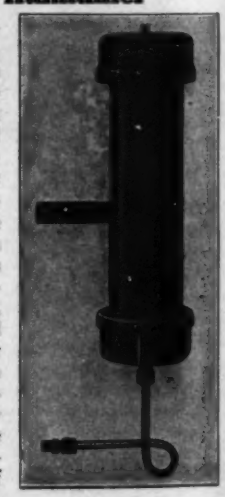
The housing is of heavy gauge spun steel. Hinged on widely spaced supports, the lens door frame is fitted with winged screw latches to provide alignment and compression on a gasket to form a seal between the lens glass and the housing.

The reflector is of glass, formed to sci-



entific lighting projection, mirrored with two layers of silver—the first, chemically deposited upon the glass, the second, electrolytically deposited upon the first, which are protected by a fired enamel backing. This design permanently seals the silver between the glass and the backing. The reflector will withstand temperatures above 300 C. (570 Fahr.).

Industrial Humidifier



Techmann Industries, Inc., 828 North Broadway, Milwaukee 2, Wis., has announced the Skilbeck E-120 *Little Giant* Industrial Humidifier. The unit, which is only 10 inches long and 3 inches in diameter, can be installed either singly or in clusters of two or more. An adjustment screw at the top of the humidifier permits control of the relative humidity, while a drain pipe with water seal keeps the unit free of an accumulation of condensate.

The condensate can be drained back from the humidifier into a steam riser against pressure, or into a vacuum return line through a vacuum trap.

The humidifier is capable of dispensing 42 lb. of water per hour or 120 gallons in 24 hours.

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TECHNICAL DEVELOPMENTS

These abstracts are of the latest developments found in the American and foreign press.

Hydrogenation of Lignin

When alcohols are heated in the presence of NaOH at 330-60 deg. C, they are converted quantitatively into the corresponding salts of the fatty acids with the liberation of hydrogen. The latter was used in the hydrogenation of various lignins. For example, Scholler-Tornesch HC1-lignin when heated at 340-50 for 9 to 11 hours with NaOH in the presence of alcohol was almost completely recovered in the form of neutral hydrogenation products, which were fractionated but not actually identified, although their carbon content ranged from 80 to 84% and their percentage of hydrogen was 13 to 11%. The molecular weights of these fractions lay between 100-160, and they contained no appreciable methoxyl. The by-product from this alcohol hydrogenation was sodium acetate. In place of ethanol, methanol may also be used as the hydrogenating agent. When sodium lignosulphonate was used with ethanol similar results were obtained. When fermented waste liquor was used, however, and no further alcohol was added, the "neutral compounds" obtained from the lignin hydrogenation were only about 22%. In the presence of Raney nickel, lignin (isolated by HC1) and ethanol acting at 250 deg. for 12 hours, yielded only 3.1% neutral substances and 32.5% phenols. When this reaction was carried in hydrogen at 140 atmospheres, 47.3% of neutral substances and 6.7% phenols were obtained. Sodium lignosulphonate and carbon monoxide at 60 atmospheres and 340 deg. gave 42.5% neutral compounds. Other experiments with various types of lignin are also described. W. Lautsch and G. Piazolo. Ber. 76, 486-98 (1943); through B.I.P.C. 13, 473 (1943).

Grewin-Karlberg Free Acid Tower

Seasonal changes in the temperature of water had unfavorable effects on the composition of tower acid in the sulphite pulp mills at Hallstavik, Sweden. In summer weather, the lime content of the cooking acid often rose from 0.8% (the desired strength) to 1.4%, and this was concomitant with a high sulphur consumption. The result was a pulp of uneven quality.

These findings were followed by extensive investigations which showed that it was possible to obtain uniform conditions, and a tower acid with the proper amount of lime, provided the bottom of an ordinary tower was converted into a "free acid section" and by installing a by-pass for the gas inlet. Thus, gas could be divided between two inlets under valve control. The one inlet was arranged above, and the other beneath the free-acid section. A height of six meters of the free acid section was sufficient to strengthen the acid to over 90% of the maximum solubility of SO_2 even when the water temperatures were quite high.

The article shows the experimental data with the modified tower in various diagrams and flow sheets, and it was found to determine the required size of the free acid tower by mathematical means. The patent of the free acid section is under the name of "Ge-Ka" (taken from those of the inventors, Grewin and Karlberg). The installation of such a section in the acid tower does not reduce the tower capacity, nor does it require additional floor space, and the lime content is adjusted by a single valve. R. Karlberg. Svensk Papperstidn. 46, No. 1, 3-14 (1943) through Bull Inst. Paper Chem. 13, 461 (1943).

Hemicellulose Content and Strength Properties

Beechwood pulps were prepared by mild sulphite cooks and were then bleached in several steps with sodium chlorite. They were then beaten to approximately 50 deg. Schopper Riegler, and tested by the German

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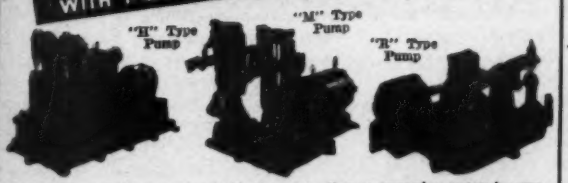

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standard methods for strength properties. Various yields of such pulp were obtained (depending on conditions of pulping) and it was shown that the highest *over-all* strength properties were obtained when the yields were 50 to 52%. However, individual strength properties gave highest values in different yield ranges. This is exemplified by the following values: Maximum breaking length for a pulp yield of 53%; optimum bursting strength for a yield of 54%; optimum elongation at 51.5%; optimum folding endurance at 53%; optimum internal tear at 47%. Thus, the over-all value is actually a compromise between the various individual optima. When a bleached pulp which was obtained in over 51% yield is treated with 0.2% NaOH so as to effect the extraction of small amounts of hemicellulose, the over-all strength increases. When, however, the pulp yield lies below this, then the removal of hemicelluloses causes a decrease in over-all strength of pulp. Thus, it becomes evident (and this confirms previous work) that maximum strength is correlated with hemicellulose content.

The bleached sulphite beechwood pulp which showed the maximum over-all strength contained 80.9% alpha-cellulose (which retained 2.82% insoluble pentosans); 1.09% lignin; and 8.7% alkali soluble pentosans and 9.32% other hemicelluloses (also soluble in 17.5% alkali, presumably containing glucose units). Despite the lignin present the pulp has an 83% whiteness (which is characteristic of sulphite bleached pulps). The copper number of this best pulp was 1.15, and the average degree of polymerization by cuprammonium was 1430; by nitrate formation it was 1666. G. Jayme and E. Lochmuller-Kerler. Holz Roh-und Werkstoff 5, No. 11, 377-81 (1942); through B.I.P.C. 13, 464 (1943).

◆

American Chemical Society

(Continued from page 806)

work and that of Messrs. O. A. Battista and M. R. Lytton, of the American Viscose Corporation. The method depends on the fractional precipitation from alkaline solution. The weight average degree of polymerization for each fraction was determined and the results gave a plot which was termed the summative distribution curve. Dr. Coppick explained the mathematical implication of this graph, as well as its relation to the more commonly used distribution curves. Results were given for a typical rayon cellulose, which was used as an example for the conversion of the summative curve to the more common graphic representations of heterogeneity in polymers.

Dr. Coppick also considered the distribution of molecular sizes in rayons on a statistical basis. An ideal case was worked out for a uniform pulp and a homogeneous degrading reaction, thus giving theoretical distribution curves. The heterogeneity of commercial pulps as well as the non-uniformity of the degrading reactions were taken into account in evolving theoretical distribution curves (for rayons) which agreed with those obtained experimentally from various commercial wood pulps and cotton linters. Actually the distribution of cellulose chain lengths were related to the spinning properties of viscose.

Finally a method was described for the fractional analysis of low viscosity and over-bleached wood pulps and linters. Chain length distribution in the original pulp had a marked effect on the distribution in the respective rayons prepared from these pulps. The papers were widely discussed.

It was shown also that crystallinity rather than degree of polymerization influenced the solubility of pulps in cold aqueous alkali. For example, Dr. Coppick found that some pulps, in which the overall degree of polymerization was low were largely insoluble in NaOH, whereas certain highly polymerized samples were very soluble. This situation was remedied by destroying the crystalline areas by solution in cupriethylene diamine and reprecipitation. The samples obtained in this way were all soluble in aqueous caustic soda.

Dr. Mark presented very vividly an important paper on elasticity, creep, and recovery of commercial viscose and acetate rayon yarns, with certain theoretical considerations that followed from flow and recovery curves obtained by Jack Press (of the Polytechnic Institute of Brooklyn).

The meeting was saddened by the sudden passing of Dr. Elmer O. Kraemer, of the Biochemical Research Foundation, who was an eminent worker in the field of cellulose research, and in the more general field of colloid chemistry.

PAPERMAKING PATENTS

IN THE UNITED STATES — Compiled by James Atkins, Registered Patent Attorney

Inquiries should be addressed to James Atkins, Munsey Building, Washington, D. C.

Paper Pulp Screen

Patent No. 2,311,813. Erich A. Beck, New York, N. Y., and Ralph E. Cleveland, Waterbury, Conn. Application August 2, 1939. Serial No. 288,018. 1 Claim. (Cl. 92—32). A screen for screening thin aqueous solutions of paper pulp in combination with a screening vat, said screen being mounted stationary in said vat above the average level of the liquid in said vat in such manner that its base line slopes downwardly towards one end of said vat, means for introducing a continuous stream of stock to be screened on the top surface of the high end of said screen, said screen being provided with slotted undulations running perpendicular to said stream of stock, said slots running parallel with the flow of stock and being sufficiently fine to screen out knots and dirt while permitting paper fibers to pass therethrough, the undulations being of sufficient height to form depressions therebetween having depths ranging from about ¼ to 1¼ inches, the upstream portion of said undulations being slotted and rising at an angle of from about 5° to 45° with respect to said base line, whereby the said stream of stock is caused to repeatedly impinge against said slots in passing across said plate thereby developing a force tending to make said stock pass through said plate, and means for intermittently producing suction and pressure beneath said screen to clean the same and to draw stock through said screen.

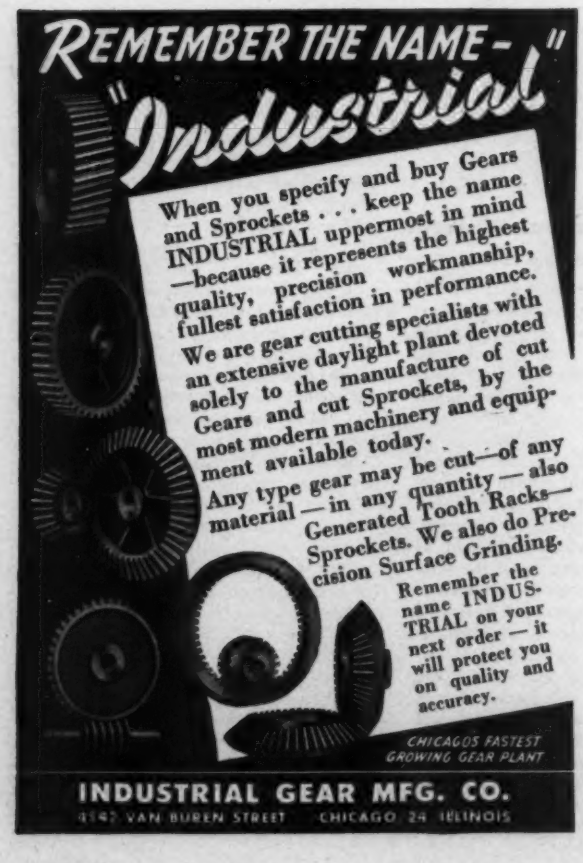
Felt Conditioning Device for Papermaking Machines

Patent No. 2,308,574. Frederick William Vickery, London, England, assignor to Vickery Incorporated, Boston, Mass. Application July 16, 1937. Serial No. 154,005. In Great Britain July 23, 1936. 6 Claims. (Cl. 92—50). A conditioner for the felts of paper-making machines including a conditioner unit comprising means for applying a conditioning fluid to a narrow width of the felt and withdrawing it by suction therefrom, a traversing mechanism for reciprocating said unit across the felt, a driving shaft, a change speed and reversing gear means in driven relation to said driving shaft and in driving relation to said traversing mechanism for driving said traversing mechanism from said driving shaft at different speeds in opposite directions, and means operatively connected to said traversing mechanism and to said gear means to actuate said gear means after a predetermined extent of travel of said conditioning unit in one direction to reverse the direction of travel of said unit and cause said unit to move in such reverse direction at a different speed from its motion prior to such reversal.

Method of Making Paper

Patent No. 2,304,361. William Hoskins, Jr., La Grange, Ill., assignor to Howard D. Meincke. No drawing. Continuation of applications Serial No. 16,506, April 15, 1935, and Serial No. 144,098, May 21, 1937. This application October 31, 1938, Serial No. 238,063. 2 Claims. (Cl. 92—21). In the manufacture of paper, the step which comprises adding to wet paper pulp before web formation a paper filler consisting essentially of a slurry of gypsum containing a small amount of alum, amounting to at least 0.5% of the gypsum, the gypsum slurry having been prepared by agitation of a quick setting gypsum cement in water in the presence of the alum through its setting period.

A paper filler consisting of a slurry of gypsum containing a small portion, at least 0.5% of alum based on the gypsum, the gypsum slurry having been prepared by agitation of a quick setting gypsum cement in water having been agitated in the presence of the alum through its setting period.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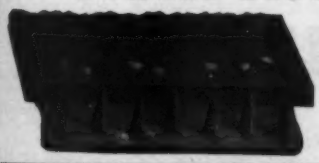

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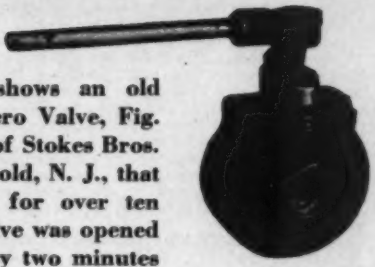

Fig. 0828

Illustration shows an old Fairbanks Sphero Valve, Fig. 0828, in plant of Stokes Bros. Mfg. Co., Freehold, N. J., that was in service for over ten years. This valve was opened and closed every two minutes for an average of five or more hours a day.

This old valve was recently replaced by a new type Fairbanks Sphero Ball Valve, Fig. 0851.

Fairbanks Sphero gives unusual service for blow-off purposes or wherever a full flow, quick-acting valve is desired.

Instead of the usual wedge or disc, Fairbanks Sphero has a revolving ball plug which wipes the seating surface clean. Its shearing action cuts through heavy solids and liquids. There is nothing on which foreign matter can accumulate.

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It can be opened or closed with a quarter turn of the handle. A positive stop tells when fully open or closed.

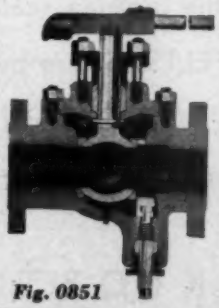

Fig. 0851

Seat rings or other parts which may become worn can be replaced without removing valve from the line.

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Fairbanks Sphero Valves

New Catalogues and Publications

American Forest Products Industries, Inc., 1319 18th St., Washington, D. C.—The School Department of the American Forest Products Industries has just released a new enlarged "Bibliography of Literature and Visual Aids" which lists material for teaching forest resources and conservation. The booklet describes and illustrates the three supplementary texts; forest map, forest products chart, series of four posters and motion pictures available to teachers upon request. It also includes two new features (1) suggestions for teaching which give teachers an idea of where and how to use American Forest Products Industries literature and visual aids, and (2) suggestions for requesting classroom material. The bibliography is obtainable from the company for teachers, school officials and forest industry organizations.

Blackhawk Mfg. Co., Milwaukee, Wis.—Catalog No. 243, a wartime buyers guide for socket, open end and box type wrenches, torque indicators and wrench assortments. Of special value in this catalogue are the "Dictionary of Popular Wrench Terms" and the "Nut and Bolt Table." The latter lists wrench and socket sizes for bolts and nuts. Copies on request.

Bridgeport Brass Co., Bridgeport 2, Conn.—A new 112 page Condenser Tube Manual has just been published by this company. This is a compact ready reference booklet on tubes used in condensers, heat exchangers and evaporators found in power plants, ships, oil refineries and process industries. It deals with the comparatively new and more corrosion-resisting alloys, such as Duronze IV, Cupro Nickel, Cuzinal and improved Admiralty, Muntz and Copper. Considerable space is given to corrosion research on the effects of the electrochemical theory of corrosion, types of protective films, oxygen and debris, impingement corrosion and protection, operating conditions, etc. It also discusses galvanic corrosion and protection, influence of temperature, water composition, minerals, carbon dioxide and sulphur. Stress corrosion and corrosion fatigue are included. It contains the latest A. S. T. M. and Federal Specifications on standard alloys, weight tables, steam notes, methods of installing and packing, cutting and removing condenser tubes, as well as weight tables and data on brass and copper pipe, copper water tubing and navy type copper tubing. Power plant, marine and refinery engineers and chemists who are interested in reducing corrosion, should have this booklet, which can be obtained by request on company stationery.

Cochrane Corporation, 17th and Allegheny Ave., Philadelphia 32, Pa.—In Cochrane Publication 2985 A, the operation of the Cochrane Air Actuated Proportioner is described fully. This proportioner is designed for the accurate feeding of sulphuric acid in the conditioning of boiler feed water, and also for proportioning any corrosive solution to the rate of flow of another fluid. The booklet is well illustrated by diagrams. Available from the company.

Department of Commerce, Washington, D. C.—A new handbook, "Community Action for Postwar Jobs and Profits" is now available from the Department of Commerce. It contains a single program by which businessmen in any community of moderate size can strengthen business in their town and prepare now for the postwar period. The activities outlined should be undertaken through a local chamber of commerce or other business organization, and not by individual companies. The Department of Commerce believes in the free enterprise system, and realizes that upon the business firms of the average town will fall the burden of assuring jobs for our demobilized fighting men, as well as the defense factory employees. This booklet is intended to help businessmen to work together to build better business in the town during and after the war.

DeLaval Steam Turbine Co., Trenton, N. J.—A new leaflet, "E-1179" entitled "Cleveland Pioneered" is being distributed by the DeLaval Company. It gives a brief account of the planning and development of Cleveland's three great pumping stations, all equipped with geared turbine-driven centrifugal pumps. It includes a chart showing the duties to be expected from geared turbine-driven pumping units of various capacities and adapted to use steam at modern pressures and temperatures.

Eclipse Air Brush Co., Inc., 390 Park Avenue, Newark, N. J.—A booklet, "Pneumix in Action," which shows Pneumix air-motored agitators in use on different types of machinery, has been issued by this company as a companion piece to their booklet on spray equipment. In addition to the interesting illustrations, there is a catalogue and price list. Sent on request.

Fairbanks, Morse & Company, 600 South Michigan Ave., Chicago—An attractive booklet illustrating this company's new protected Polyphase Squirrel Cage Motor, with tables giving dimensons, frame sizes and motor characteristics may be had free.

The Felt Association, Inc., New York—The pamphlet, *Felt Facts,* just released by the Felt Association, is a non-technical description of the process of felt manufacture. A surprising number of uses for felt, both civilian and military, are listed, particularly as a sub-

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A mill owner using silicate for 30 years says: "...the percentage of pop-test readings to basis weight is considered to be increased by an average of five points.....Occasionally a paper may run too low in strength and an increase of silicate alone in the furnish will raise the test one or two pounds or even more."

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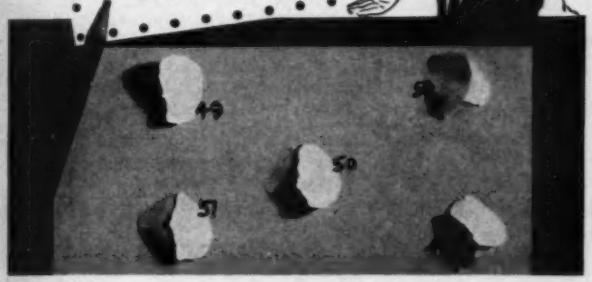

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FLAMEPROOFING AGENTS
WATERPROOFING AGENTS
AND OTHER SPECIALTIES FOR
THE PAPER INDUSTRY

★

Write for our catalogue "Chemicals by Glyco"

GLYCO PRODUCTS COMPANY, INC.
26 COURT STREET, BROOKLYN 2, NEW YORK

stitute for priority materials. The text is supplemented with some fine drawings. Copies gratis from Korbel & Colwell, Inc., 480 Lexington Ave., N. Y. C.

General Electric Co., Schenectady, N. Y.—For information on the amplidine, a G-E Engineering development which puts short circuits to work, write for the 36 page bulletin GEA-4053. This booklet describes the engineering details and functions of the amplidine, and contains diagrams of various applications for this new device. Also available in Bulletin GEA-3856, describing the G-E Cabinetrol, a system for providing motor control for complex industrial processes. Included in the booklet are layout tables showing how installations can be made, and a section listing the compartment sizes of the standard Cabinetrol units.

Ideal Commutator Dresser Co., Sycamore, Ill.—War plants which must run 24 hours a day will find the new Ideal Maintenance booklet No. 143, particularly helpful. It has 38 pages of information on keeping motors and generators running continuously at peak efficiency. . It includes descriptions and illustrations of Ideal products, such as industrial electrical equipment, variable speed transmission, machine tool accessories, wiring devices and tools, and rechargeable batteries for flashlights. Sent without charge.

Leeds and Northrup Company, 4934 Stenton Ave., Philadelphia 44, Pa.—A new 16-page catalogue describing the improved portable universal pH indicator can be had by asking for E-96(3). Direct reading with glass, hydrogen and quinhydrone electrodes, this indicator has many uses in both plant and laboratory.

Joshua Hendy Iron Works, Pomona Pump Co. Division, 206 East Commercial St., Pomona, Cal.—The Westco Industrial Pump Catalog No. 43, now being distributed by this company, not only gives the complete story of the Westco Pumps, but also a brief description of the Pomona Pumps. The duotone illustrations and diagrams tell a graphic story of pump operation and construction.

The Youngstown-Miller Co., Sandusky, Ohio—If you have a problem in oil reclaiming, write for the illustrated folder announced by this company, describing their A and GH lines of Lubricating and Hydraulic Oil Reclaimers. These reclaimers are suitable for restoring all types of used oils, including oils drained from aircraft engines, Diesel locomotives, marine statonary Diesel engines, hydraulic machines, gear reducers, compressors, portable Diesels, gasoline engines, gas engines, ice machines, vacuum pumps and similar installations. The machines are said to be capable of reclaiming used oils without presettling or pre-treatment and restoring the oil to substantially the same values of fire, flash, viscosity, color, neutralization number and precipitation number as the new parent oil.

Books

Standards of Hydraulic Institute (Test Code)—This publication supersedes revision of July, 1941 and is further designated as Section F—Seventh Edition. It includes the test codes of the Hydraulic Institute covering centrifugal pumps, rotary pumps, and reciprocating pumps. It is a paper-covered publication of 32 pages. The price is 50 cents a copy; the source, Hydraulic Institute, 90 West St., New York City.

Mac Queen's Directory of Coal Operating Companies (Eighth Edition)—The contents of this volume include the following: Directory of Coal Operating Companies, alphabetically arranged by states; Location of Purchasing Offices; Coal Operating Companies, alphabetically arranged by name of company; and Coal Producing Mines, alphabetically arranged by name of mine, showing name of operator, including county and state in which located. Published annually, this edition of the directory contains more than 200 pages of reference data. It is priced at $7.50 a copy by National Coal Publications, Berger Building, Fourth Ave. and Grant St., Pittsburgh, Pa., the publisher.

Memorandum on Fuel Economy (No. 1 and 2)—Issued by The Paper Makers' Association of Great Britain and Ireland, Melbourne House, Aldwych, London, W.C.2, England, these two bulletins or pamphlets were prepared by the Association's Fuel Economy Technical Committee. The publications interpret the bulletins issued by the Ministry of Fuel and Power (Great Britain) in terms of the paper industry. Memorandum No. 1, in part, discusses briefly the recovery and use of condensate, the economy of power in the beater room and in the machine room, ventilation of machine room, and economy in steam used directly and/or indirectly for power and sundry purposes. Memorandum No. 2 takes up boiler feedwater treatment; the heat drop; steam traps, heat economy in mills cooking waste wood, straw, etc.; and saving and recovery of heat in machine rooms. The price of Memorandum No. 1 is 1/6; of No. 2, 3/6.

Synthetic Adhesives—This volume by Paul I. Smith is confined to the consideration of synthetic adhesives commonly known as cements, glues, sealing and bonding agents, etc. The main type of adhesives described within it are: phenol-formaldehyde resins, urea-formaldehyde glues, cellulose adhesives, polyvinyl cements, acrylic resin cements, and chlorinated rubber and synthetic rubber cements. The use of synthetic adhesives in the manufacture of plywood likewise is touched upon as are also general applications of the adhesives in industry. The book is priced at $3 a copy by The Chemical Publishing Co., Inc., 234 King St., Brooklyn, N. Y., the publisher.

CURRENT MARKET QUOTATIONS

RAGS (Domestic)

NEW RAGS — *per cwt.*

OPA ceiling prices in sales to consuming mills delivered buyer's usual receiving point, with brokers' allowance not in excess of 5 per cent.

Blue Overalls	-5.50
Corduroy, Men's	-3.50
Corduroy, Ladies'	-3.00
Washables, No. 1	-3.00
Percales	-4.75
New Soft Blacks	-3.75
Light Prints, No. 1	-4.50
Khaki Cuttings—	
Bleachable	-4.25
Unbleachable	-3.50
New White Canvas	-6.50
New Mixed Blacks	-3.25
Canton Flannels, Bleached	-7.00
Shirt Cuttings—	
New White No. 1	-7.25
No. 1 White Heedings	-7.25
White Shrunk	-6.00
Silesias No. 1	-5.75
New Unbleached	-7.50
Fancy	-3.50
Linen Cuttings—	
American	-5.00
White	-14.00
Grey	-14.00

RAGS (Domestic)

f. o. b. New York City

OLD RAGS

OPA ceiling prices in sales to consuming mills f. o. b. cars at points of shipment, with brokers' allowances of $1 to $3 a ton depending on the value of the grade involved.

	per ton
Roofing—	
No. 1	31.00
No. 2	29.00
No. 3 and No. 4	27.00
Twos and Blues—	
Repacked	44.00
Thirds and Blues—	
Repacked	44.00
Miscellaneous	36.00
Whites, No. 1—	
Repacked	76.00
Miscellaneous	64.00
Whites, No. 2—	
Repacked	58.00
Miscellaneous	53.00

RAGS (Foreign)

ex dock New York City

NEW RAGS — *per cwt.*

New Dark Cuttings	Nominal
New Mixed Cuttings	
New Light Silesias	
Light Flannelettes	
Unbleached Cuttings	
New White Cuttings	
New Light Oxfords	
New Light Prints	

RAGS (Foreign)

ex dock New York City

OLD RAGS — *per cwt.*

No. 1 White Linens	Nominal
No. 2 White Linens	
No. 3 White Linens	
No. 4 White Linens	
No. 1 White Cottons	
No. 2 White Cottons	
No. 3 White Cottons	
No. 4 White Cottons	
Extra Light Prints	
Ord. Light Prints	
Med. Light Prints	
Dutch Blue Cottons	
French Blue Cottons	
French Blue Linens	
Checks and Blues	
Linsey Garments	
Dark Cottons	
Old Shopperies	

ROPE and BAGGING

f. o. b. and ex dock New York City

Gunny No. 1—	*per cwt.*
Foreign	Nominal
Domestic	3.00 to 3.25
Wool Tares—	
Light	3.25 to 3.50
Heavy	3.50 to 3.75
No. 1 Scrap Bagging	2.75 to 3.00
Manila Rope—	
No. 1 large	-*115.00
No. 1 small	-*105.00
Sisal Rope—	
No. 1 large	-*95.00
No. 1 small	-*85.00
New Burlap Cuttings	5.50 to 5.75
Jute Threads—	
Foreign (Nom.)	6.25 to 6.75
Domestic	5.50 to 6.00
Strings—	
No. 1 sisal	-*80.00
No. 2 sisal	-*60.00
Soft Jute	5.00 to 5.25
Mixed	1.50 to 1.75

*OPA ceiling price per ton f. o. b. shipping point.

WASTE PAPER

OPA ceiling prices f. o. b. points of shipment, with brokers' allowance of 4 to 9 per cent.

Shavings—	*per ton*
White Env. Cuts, One-Cut	67.50-
Hard White Env. Cuts	62.50-
Hard White, Unruled	57.50-
Soft White, One-Cut	57.50-
Soft White, Misc.	43.00-
Fly Leaf, No. 1	33.50-
Fly Leaf, Woody, No. 1	25.00-
No. 2 Mixed Col. Woody	18.00-
Flat Stock—	
Repacked No. 1 Heavy Books and Magazines	33.50-
Mixed Books	17.00-
Ledger Stock—	
No. 1 White	42.50-
No. 1 Mixed (Colored)	37.50-
Manilas—	
New Env. Cuttings	52.00-
New Env. Cuts, One-Cut	57.50-
Extra Manilas	37.00-
Manila Tab Cards, Free of Ground Wood	45.00-
Ground Wood Manila Tab Cards	27.00-
Kraft—	
Envelope Cuttings	45.00-
Mixed Env. or Bag Cuts	55.00-
Tripled Sorted No. 1 Brown	50.00-
New 100% Cor. Cuts	45.00-
No. 1 Old Assorted	35.00-
News—	
White Blank	32.00-
Oversizes	17.00-
No. 1 Baled	15.00-
Old Corrugated Containers	23.00
New Corrugated Cuts	18.00-
Mill Wrappers	17.00-
Box Board Chips	14.50-
No. 1 Mixed Paper	14.00-

CHEMICALS

f. o. b. shipping point

Alum (Papermakers)—	
Lump, cwt.	4.25-
Ground, cwt.	4.00-
Powdered, cwt.	4.40-
Blanc Fixe—	
Pulp, bulk, ton	40.00 to 46.50
Dry, barrels, pound	60.00 to -
Bleaching Powder—	
Drums, cwt.	2.25 to 3.10
Casein (Domestic Standard)—	
20-30 mesh (bags), lb.	24.00 to 24.75
80-100 mesh (bags), lb.	—
Argentine, lb.	—
China Clay—	
Domestic Filler Bulk (mine) ton	7.50 to 15.00
Domestic Coating Bulk (mine) ton	12.00 to 22.00
Imported (ship side) Bulk (lump) ton	15.00 to 26.00
Chlorine—	
Tank cars (wks) cwt.	2.00 to 2.25
Gelatine (silicin), lb.	.90 to .95
Glyc. (C.P.) drums, lb.	18.25 to 18.50
Litharge, powd., bbl., lb.	.09 to -
Rosin (Gum)—	
New York, per 100 lbs.	
E	4.51-
F	4.52-
G	4.55-
WW	5.73-
Rosin (Wood), carlots	3.64-
Salt Cake—	
Dom. bulk (wks) ton	15.00 to 16.00
Imp. bulks on dock—(Atl. ports) ton (Nom.)	20.00 to
Soda Ash—	
Bulk (works), cwt.	.90 to .95
Paper Bags, cwt.	1.05 to 1.35
Barrels, cwt.	1.05 to 1.35
Soda (Caustic)—	
Solid, drums, cwt.	2.30 -
Ground and flake, drums, cwt.	2.70 -
Sodium Silicate—	
60 deg., 55 gal. drums, (works) cwt.	1.65 to 2.05
40 deg., 35 gal. drums, (works) cwt.	.80 to 1.45
Starch—	
Pearl, 140 lb. bags, cwt.	3.10-
Pearl, barrels, cwt.	3.20-
Paper (8p.) bags, cwt.	3.20-
barrels, cwt.	3.30-
Sulphur (crude)—	
(mine) bulk, long ton	16.00 to 20.50
Talc—	
Dom. 100 lb. bags (mine) ton	16.00 to 21.00
Imp. bulk, ton (Nom.)	—
Titanium Dioxide—	
Barium Pig., bbls., lb.	.05¾ to .06
Calcium Pig., bbls., lb.	.05 to .05¼
Zinc Sulphide, bbls., lb.	5.60 to 5.85

WOOD PULP

OPA maximum prices applicable to wood pulp delivered to consumer mills located East of the Continental Divide exclusive of Denver, Colo.:

Bleached softwood sulphite	76.00
Unbleached softwood sulphite	66.00
Bleached hardwood sulphite	73.50
Unbleached hardwood sulphite	63.50
Bleached Mitscherlich sulphite	81.00
Unbleached Mitscherlich sulphite	72.00
Northern bleached sulphate	86.00
Southern bleached sulphate	79.00
Northern semi-bleached sulphate	82.00
Southern semi-bleached sulphate	75.00
Standard news print sideruns	46.00
Northern unbleached sulphate	73.00
Southern unbleached sulphate	63.50
Bleached soda pulp	66.00
Unbleached soda pulp	62.00
Ground wood pulp	46.00
Sulphite screenings	38.50
Sulphate screenings	38.00
Ground wood screenings	30.00
Northern unbleached sulphate sideruns	73.00
Southern unbleached sulphate sideruns	63.50

PAPER

f. o. b. New York City

Boards—	*per ton*
Binders	84.00-
Chip	45.00-
Chip, sgl. mla. lined	60.00-
Coated, white patent .016	80.00-
.020 and heavier	75.00-
Kraft liner	63.00-
News	48.00-

Book Papers—OPA base maximum prices per cwt. 4 cases or equivalent, f. o. b. mill with quantity, weight, manufacturing and other differentials allowed:

Uncoated (Untrimmed)

Book, White (M. F.)—	
A Grade E. F.	8.25
B Grade E. F.	7.80
C Grade E. F.	7.55
D Grade E. F.	7.30
E Grade E. F.	7.05
No. 2 Uncoated Offset 4 sides. White	8.45
Coated White (Trimmed 4 sides)	
No. 1 Glossy	11.90
No. 2 Glossy	10.85
No. 3 Glossy	10.15
No. 4 Glossy	9.80
No. 5 Glossy	9.30
C2S Offset	10.40
C1S Litho (Varnish)	10.05
C1S Litho (Non-Varnish)	9.80

Writing Papers—OPA base maximum prices per cwt. on writing papers, f. o. b. mill with zone, quantity, packing and other differentials allowed:

Rag Content Bond—	*per cwt.* 20 lb.	16 lb.
Extra 100% Rag	34.00	34.00
100% Rag	28.00	28.00
75% Rag	20.00	20.00
50% Rag	16.00	17.25
25% Rag	14.00	15.00

Rag Content Ledger—	*per cwt.* Zone 1
Extra 100% Rag	35.00
100% Rag	29.00
85% Rag	26.00
75% Rag	21.00
50% Rag	17.00
25% Rag	15.00

Sulphite Bond—	*per cwt.* 20 lb.	16 lb.
Air dry, watermarked	12.75	13.70
No. 1 (M. F.) watermarked	9.00	9.70
No. 2 (M. F.) watermarked	8.25	8.85
Plain (M. F.) unwatermarked	7.60	8.30

Sulphite Ledger—	*per cwt.* Zone 1
No 1 (M. F.) watermarked	10.00
No. 2 (M. F.) watermarked	9.25
Plain (M. F.) unwatermarked	8.60

Glassine (f. o. b. mill)—	*per cwt.*
Embossed (25 lb. up)	13.75 to 14.25
Bleached (25 lb. up)	12.75 to 13.25
Unbleach. (25 lb. up)	11.50 to 12.00
Greaseproof—	
Bleach. (25 lb. up)	11.00 to 11.50
Unbleach. (25 lb. up)	10.00 to 10.50

News—OPA Ceilings	*per ton*
Rolls (Contract)	58.00
Rolls (Spot)	(nominal)
Sheets	60.00

Tissues (Carlots)—	*per ream*
White, No. 1	1.12½ to 1.30
White, No. 2	1.00-
Bleached Anti-Tarnish	1.15-
Colored	—
Anti-Tarnish Kraft	.70-
Manila	.80 to .95
Napkins, semi-crepe (12½ lb. to M shts.) per cs.	.60-
Napkins, full crepe and emb'ssed (12½ lb. to M shts.) per cs.	.60-
Toilet, Bleached (M shts.) per cs.	5.65-
Toilet, Unbleached (M shts.) per cs.	4.25-

Towels—	*per case*
Bleached	3.20 to 3.75
Unbleached	2.60 to 3.00

Wrappings (Kraft)—	*per cwt.*
Super-Standard	5.25-
No. 1 Wrapping	5.00-
Standard Wrapping	4.75-
Standard Bag	4.37½-

Wrappings (Sulphite and Bleached Kraft)—
(Rolls, f. o. b. mill)

Bleached papers—	*per cwt.*	
M.F. & M.G. Waxing, 20 lb. (Carloads only)	7.25 to	7.50
(10,000 lbs.)	7.50 to	7.75
Drug wrapp. 35 lb.	7.00 to	7.25
Unbleached Papers—		
Com. Grd. Butch. 40 lb.	5.50 to	5.75
No. 1 Butchers	5.75 to	6.00
No. 1 Imit. Parch & Dry Fin. Groc. Sulphite 30 lb.	6.25 to	6.50
No. 2 Imit. Parch & Dry Fin. Groc. Sulphite 30 lb.	6.00 to	6.25
Steam Finish, 50 lb.	5.00 to	5.25
Water Finish, 40 lb.	5.50 to	5.75

Manilas—		
Envp. Mla., Sub. 16-40 (No. 1)	6.00 to	6.25
Envp. Mla., Sub. 16-28 (No. 2)	5.75 to	6.00
Envp. Mla. (Prices based on large sheets untrim'd reammarked, in bdls.)		
Wrapp. Mla. 35 lb. up—		
No. 1	6.00 to	6.25
No. 2	5.75 to	6.00
M. G. Sulphite and Kraft (other than Waxing)		
Grade A-32 lb.	7.20 to	7.40
Grade B-30 lb.	6.75 to	7.00

Clean Your Beaters This *FASTER, EASIER* Way!

By employing the Oakite steam-detergent method for cleaning beaters you can do this essential job FASTER and EASIER.

You will find the TRIPLE COMBINATION of heat, mechanical force and Oakite detergent action makes quick work of removing ALL slime and other deposits. The next time . . . try the speedier Oakite way and let the results speak for themselves!

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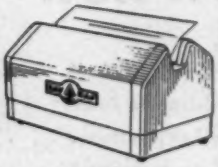
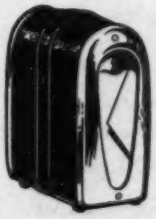
The time-saving inner-wrap service for meat markets, delicatessens, groceries.



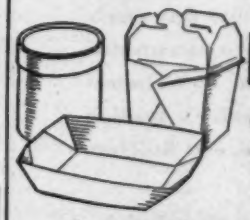
SAV-A-RAP

The inter-folded waxed paper service for retail bakeries, luncheonettes, restaurants.



NAPKINS

Illustrated, Tux dispenser and napkins. Also Compact and Super-Serv dispenser services.



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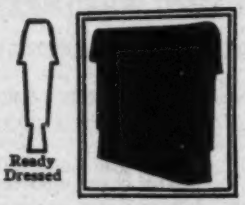

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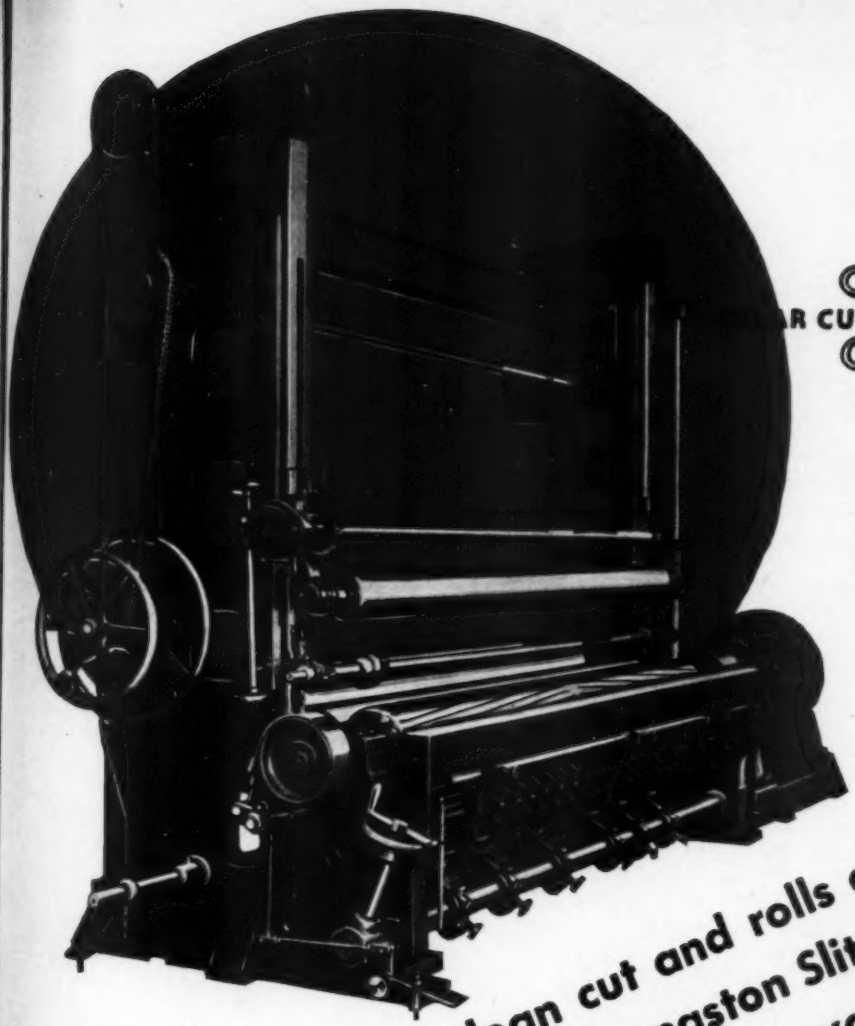

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